

Annexes

VALIDATION OF THE CL-CTM FREEWAY MERGE MODEL

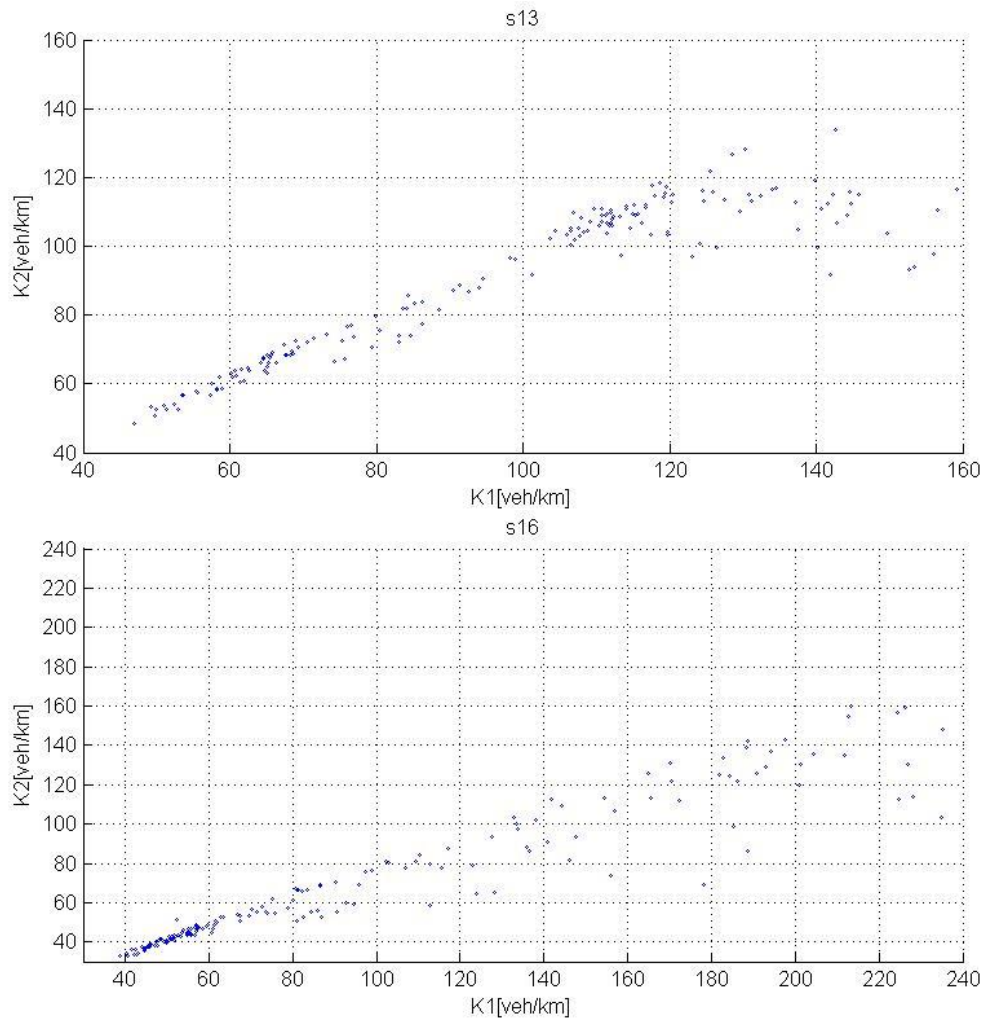
Carles Cañero Martínez

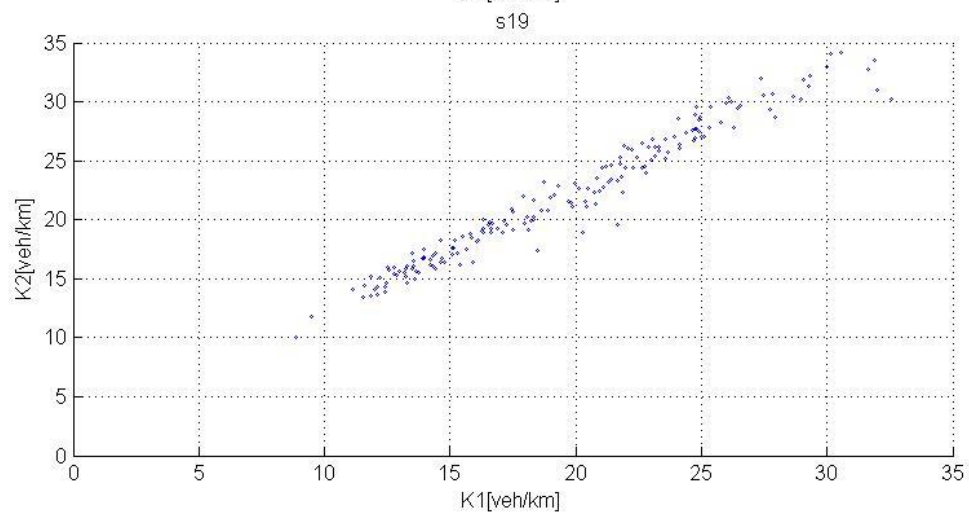
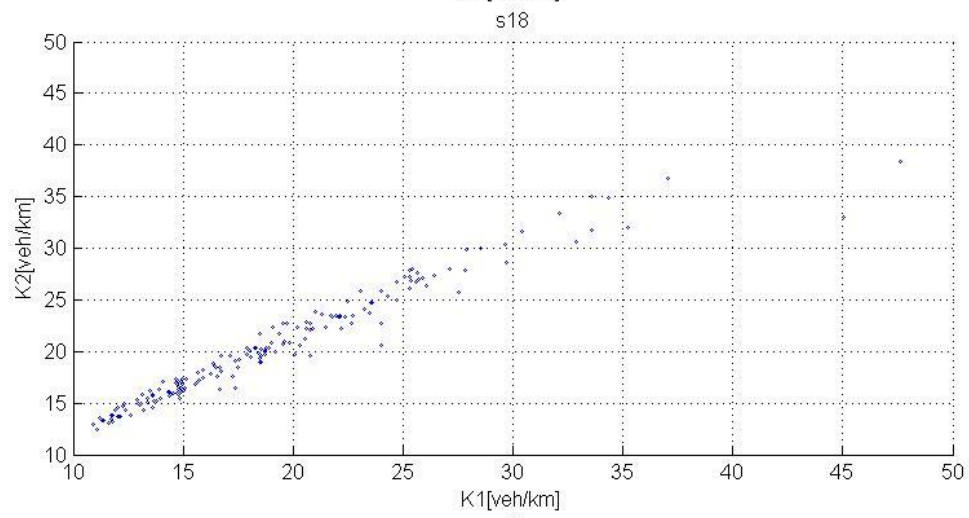
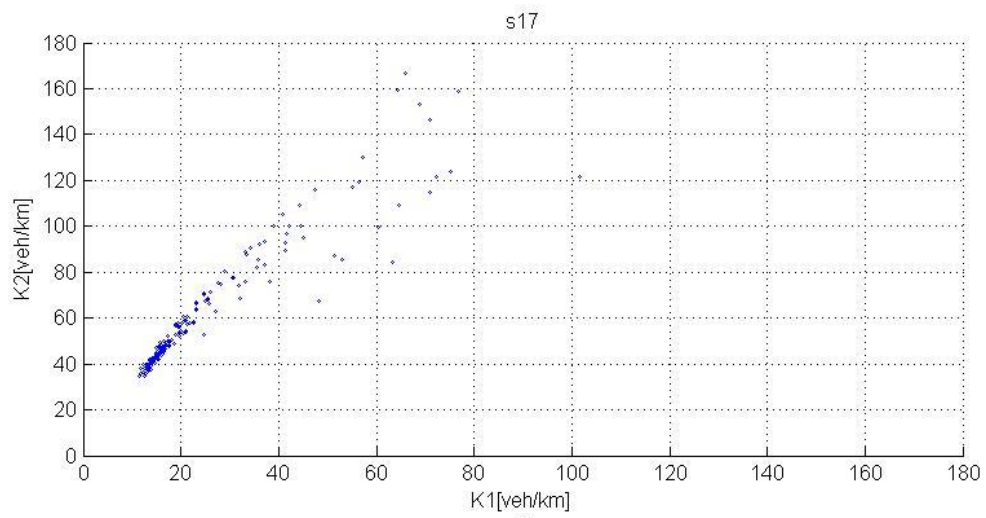
In these annexes, unlike in the paper where just the most relevant graphics are shown, all the graphics from where the parameters and results were obtained are presented.

In addition, those graphics presented in the paper are also in the annexes to facilitate the comparative between days or sections. Moreover, they are firstly presented those which were used for the Parameters Estimation chapter and then those in Model Results & Validation.

Parameters Estimation

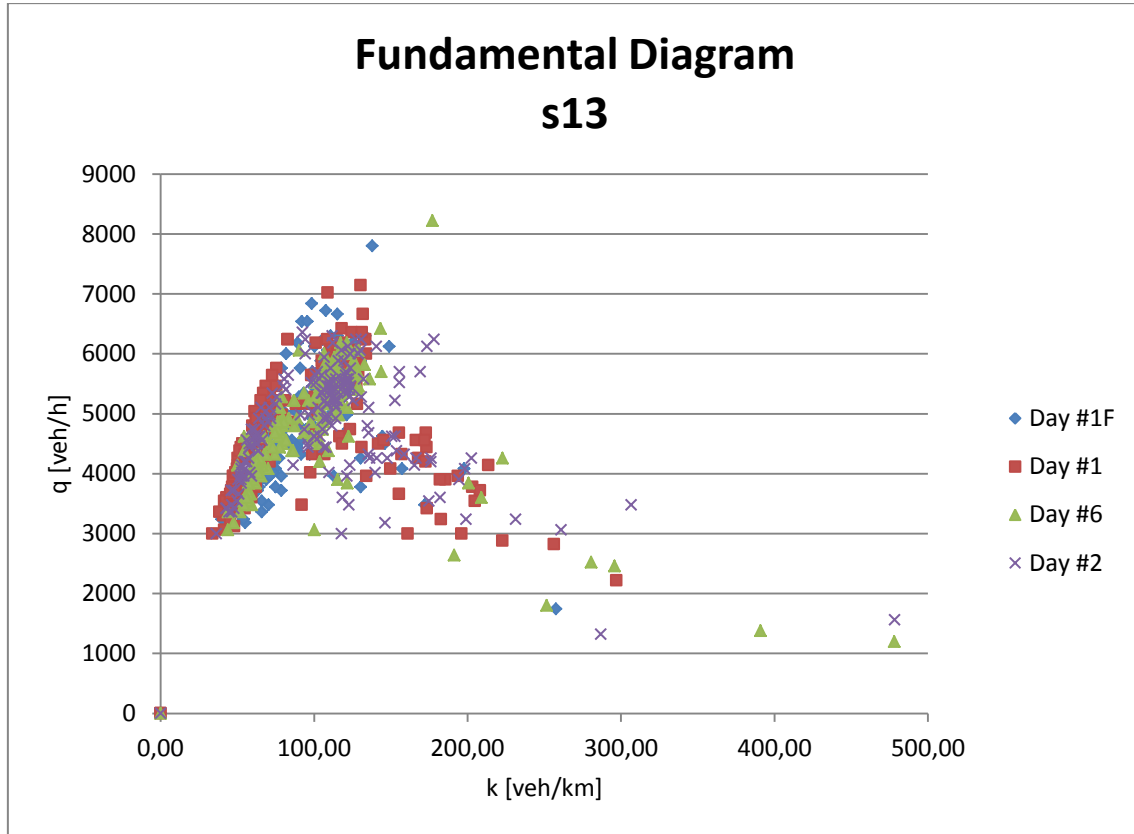
Annex 1: $k_1 - k_2$



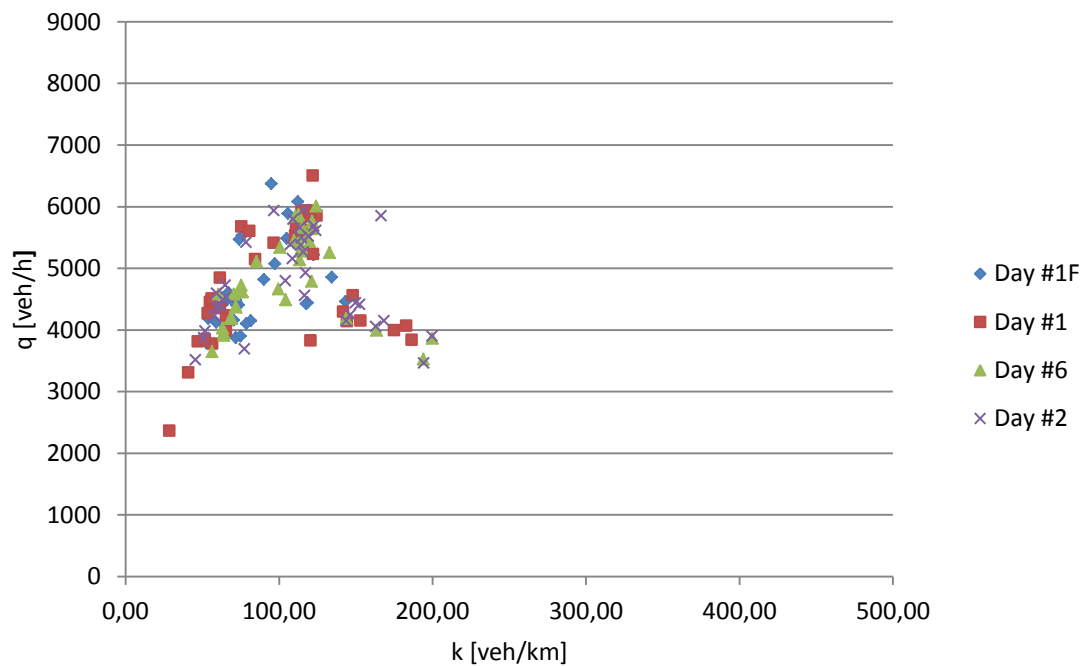


Annex 2: Fundamental Diagrams

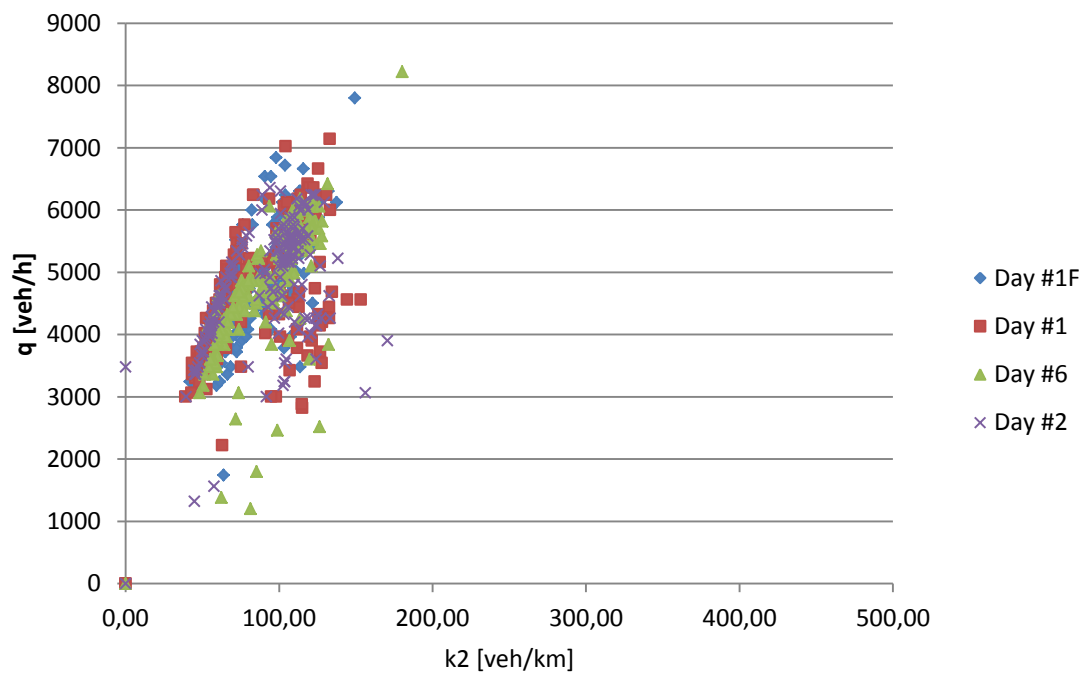
They are presented for first option density (k_1) and second option (k_2) as well as all the values and with 5 minutes aggregation. The order will be for each section: FD (k_1), FD (k_1) 5 minutes aggregation, FD (k_2) and FD (k_2) 5 minutes aggregation.



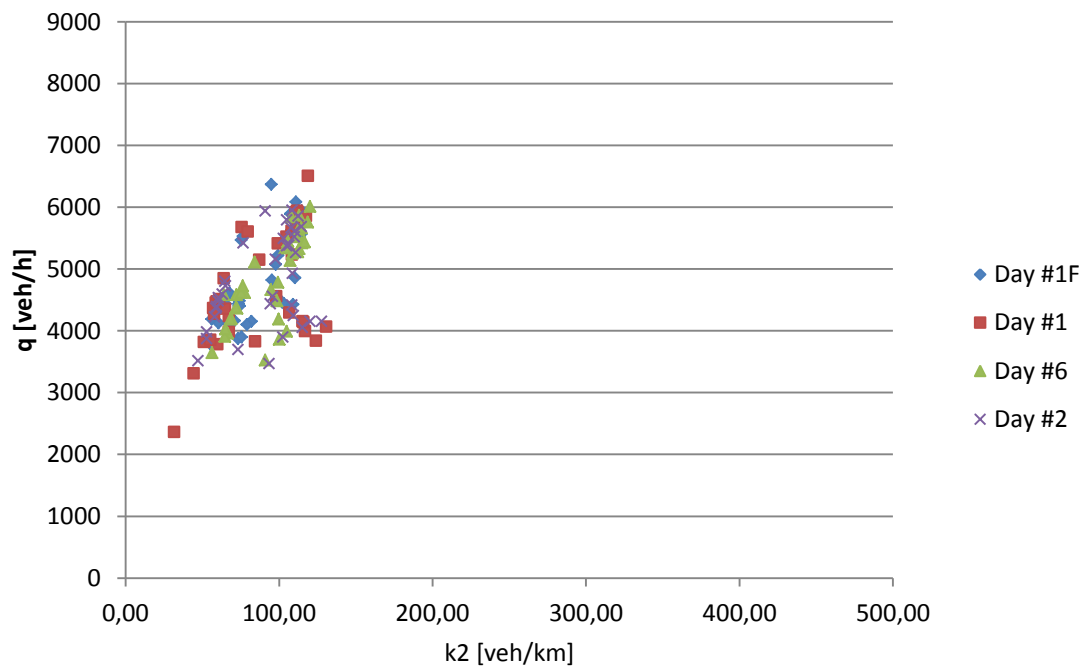
Fundamental Diagram s13 (5 min)



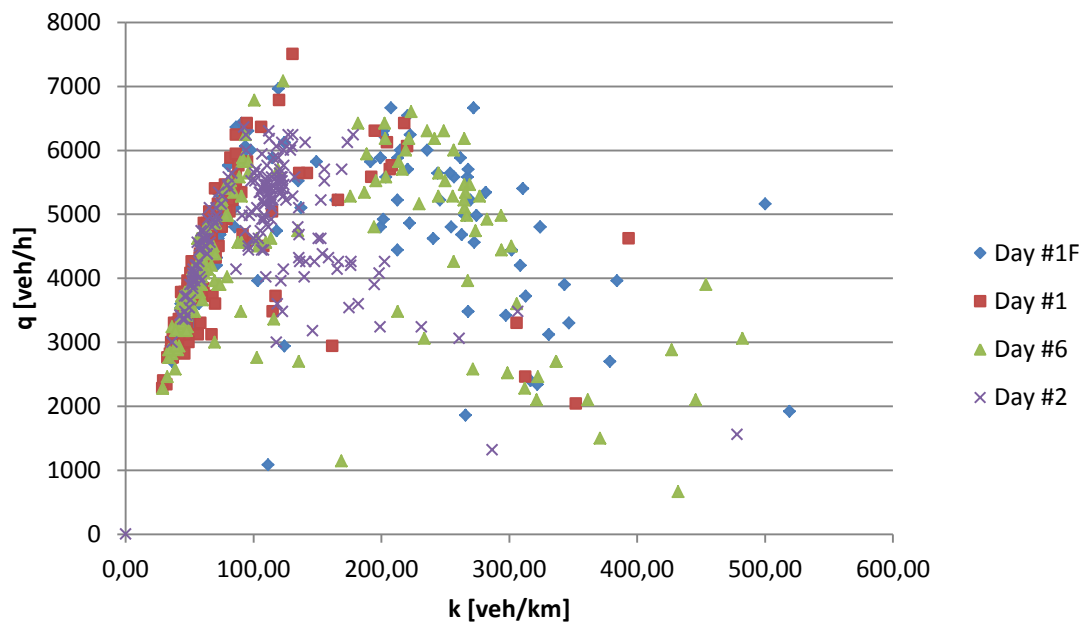
Fundamental Diagram s13



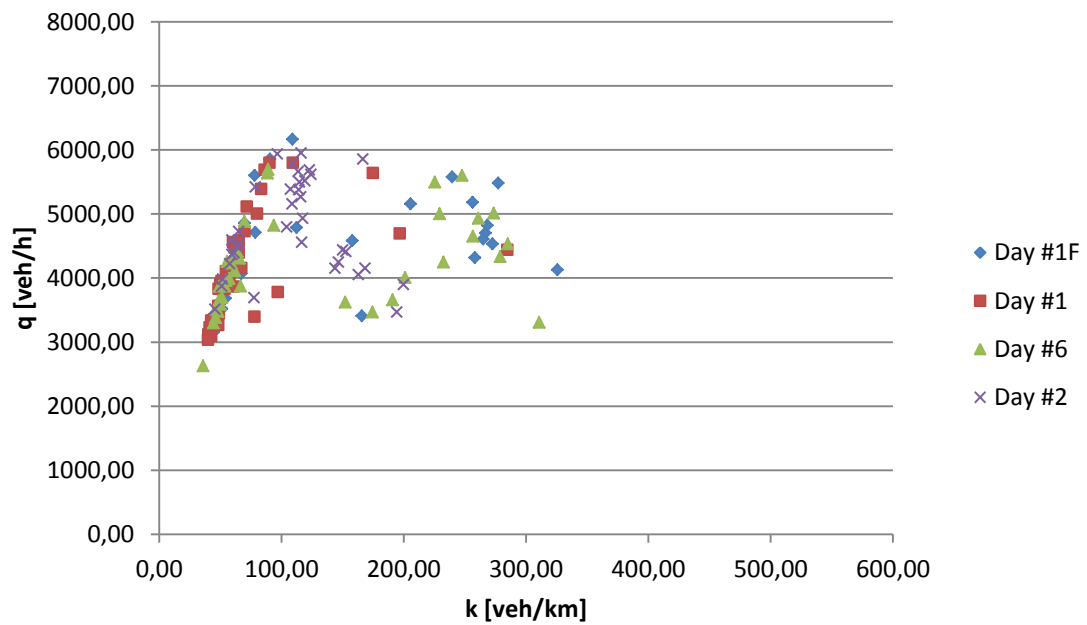
Fundamental Diagram s13 (5min)



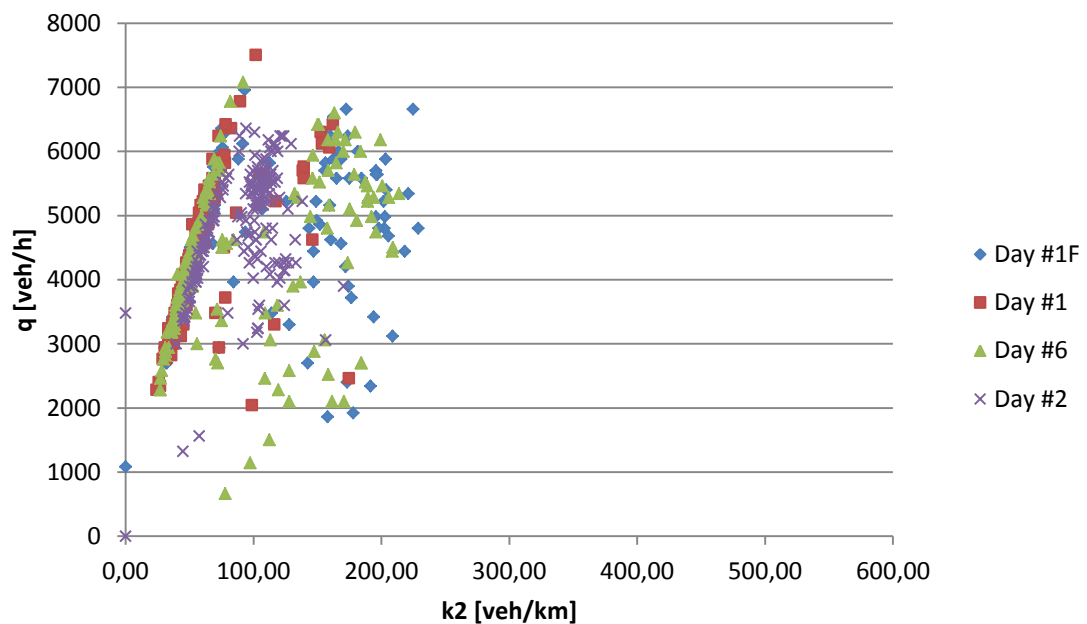
Fundamental Diagram s16



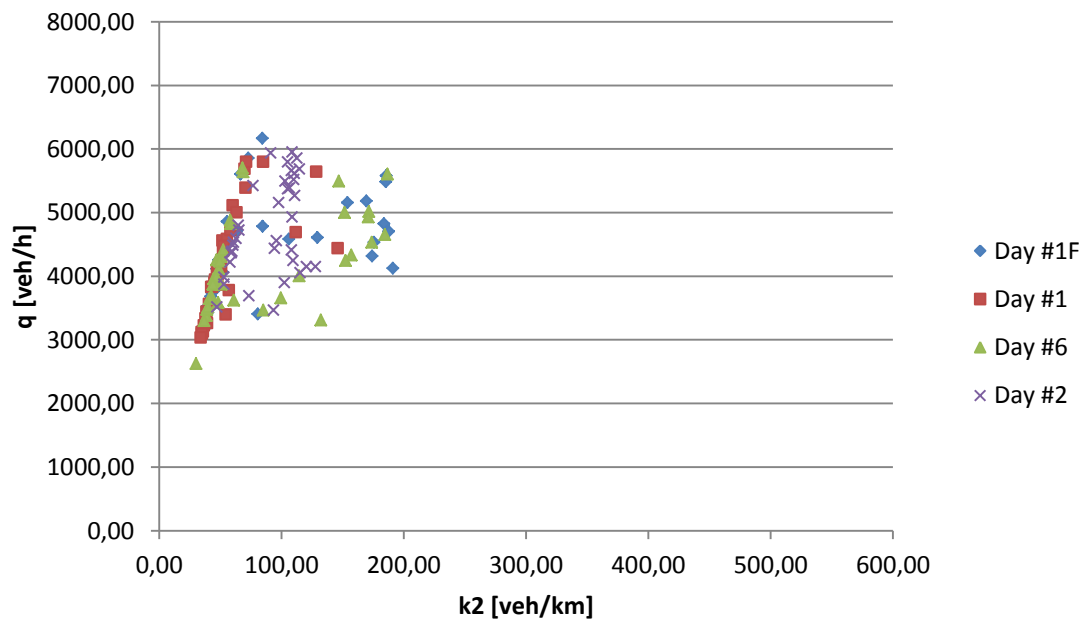
Fundamental Diagram s16 (5min)



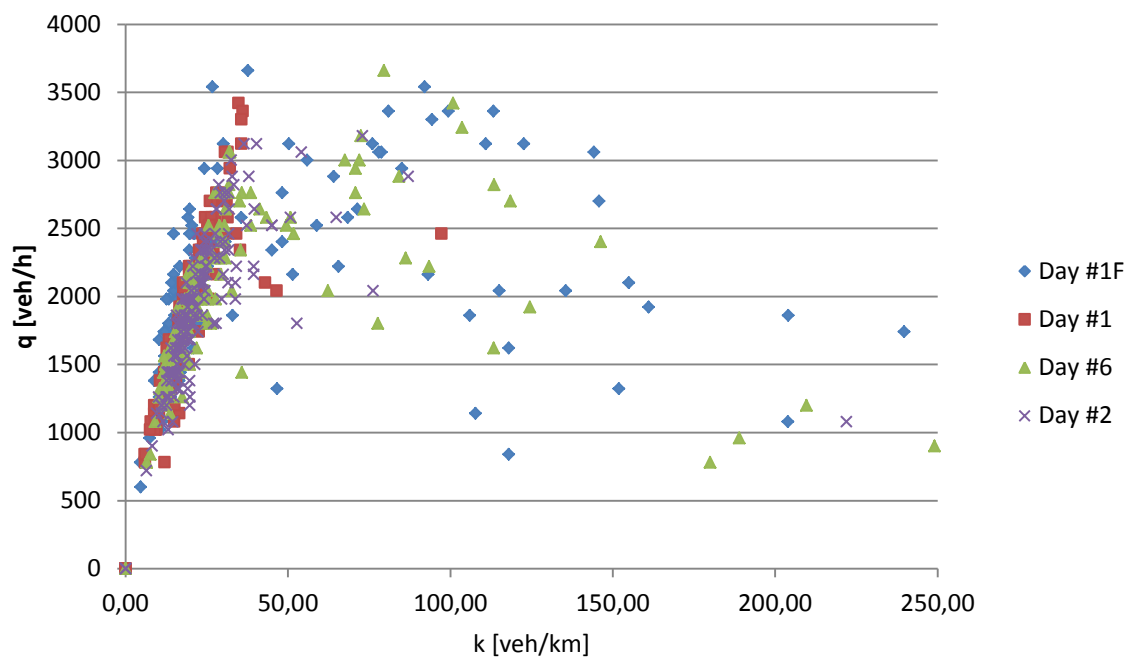
Fundamental Diagram s16



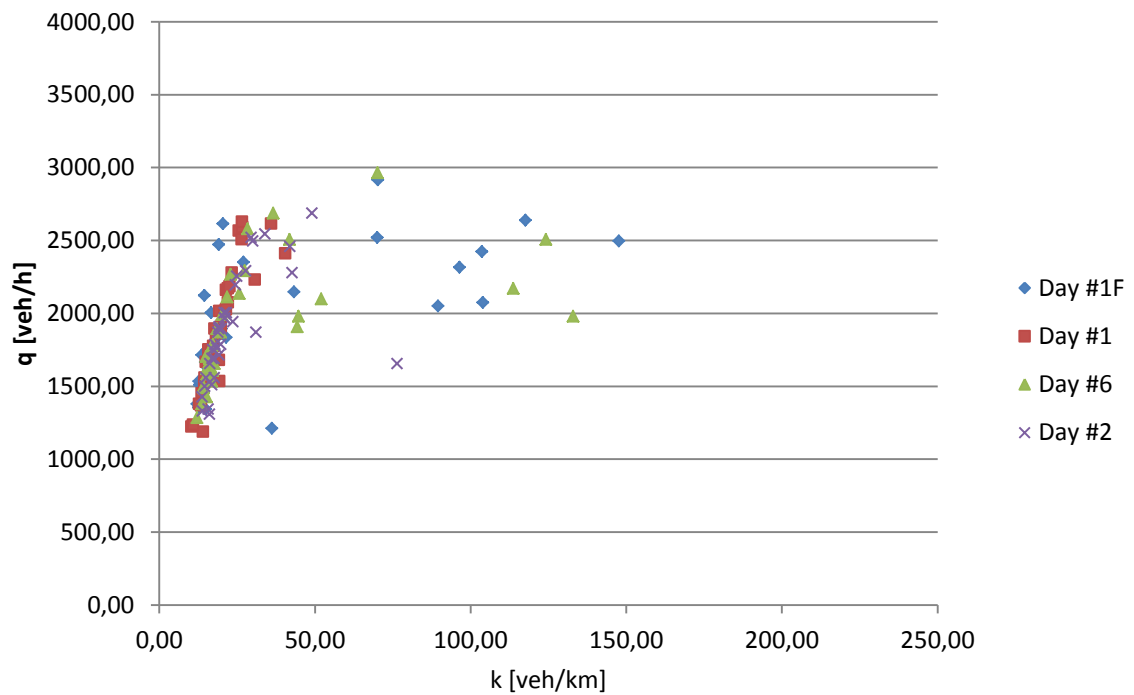
Fundamental Diagram s16 (5min)



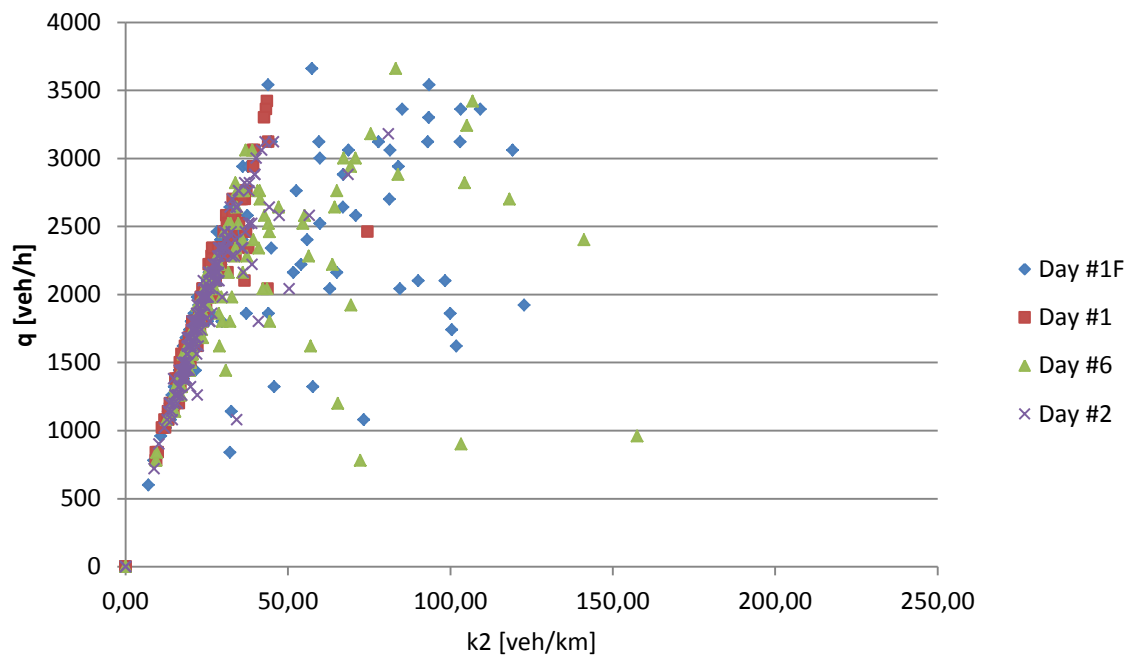
Fundamental Diagram s17_12



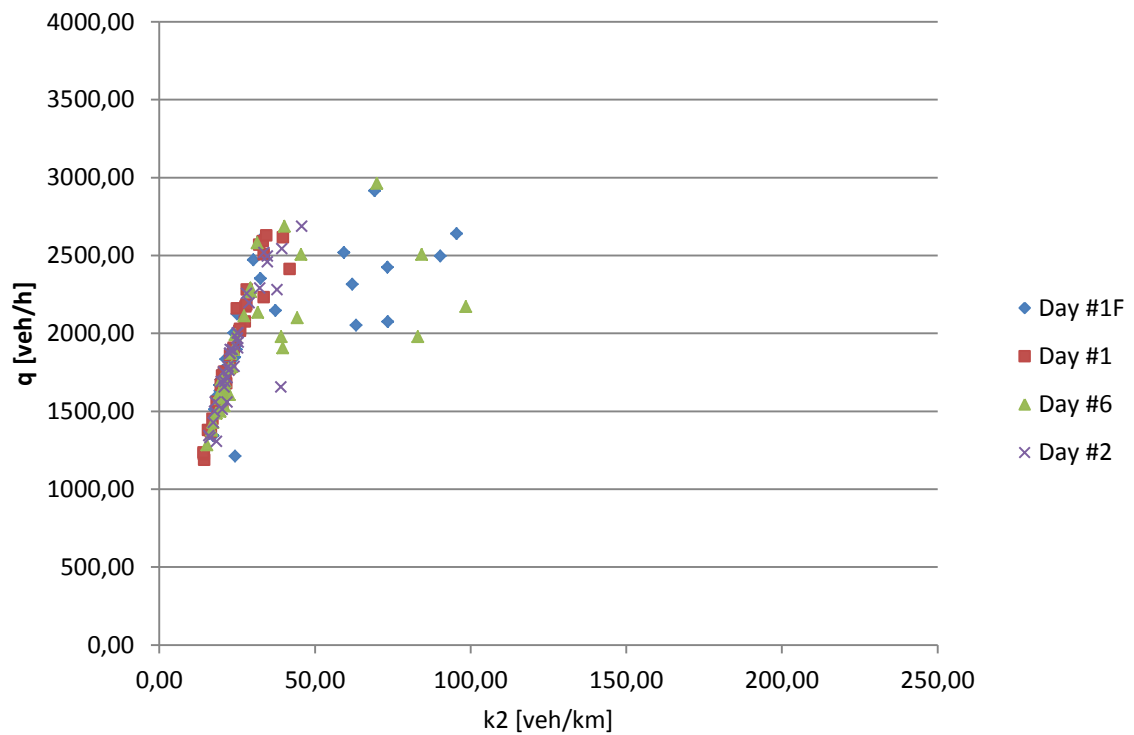
Fundamental Diagram s17_12 (5min)



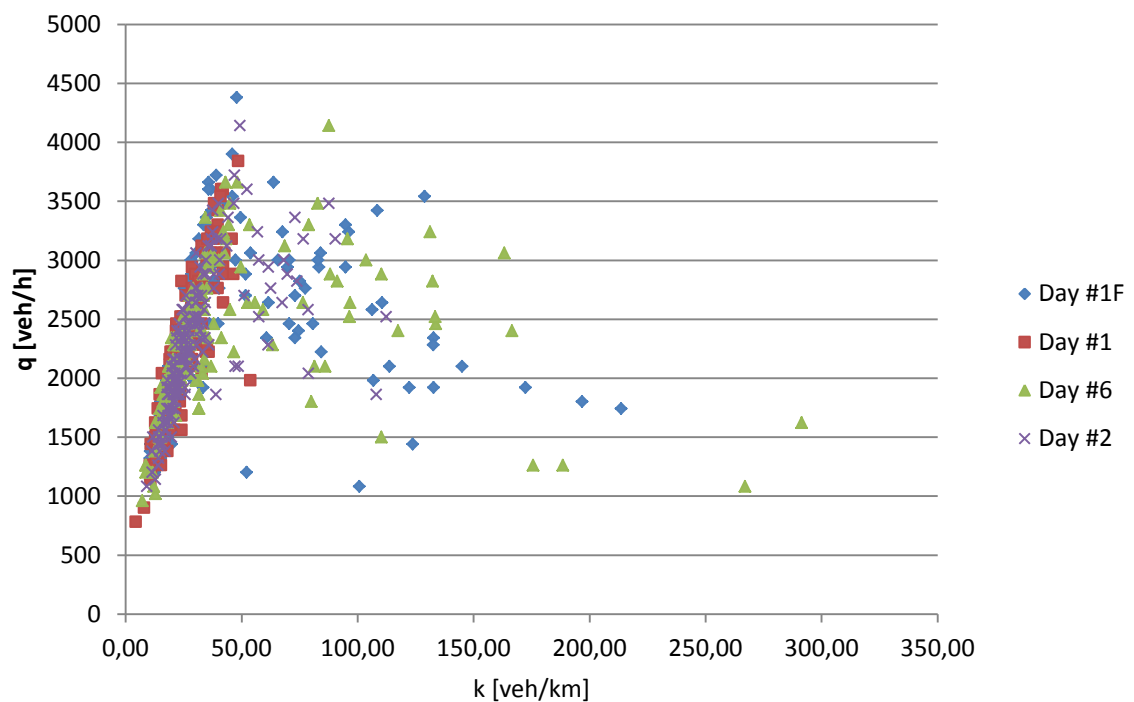
Fundamental Diagram s17_12



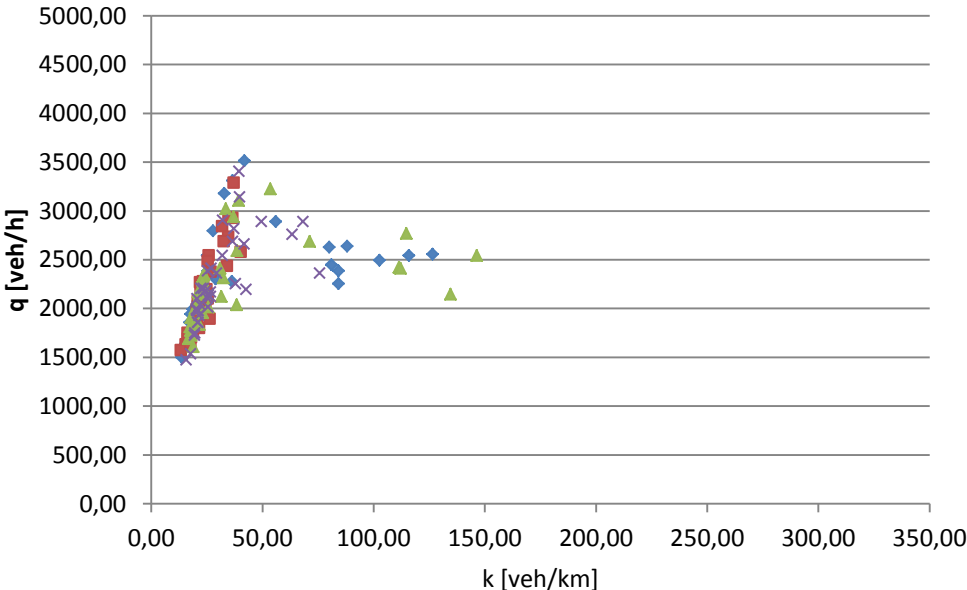
Fundamental Diagram s17_12 (5min)



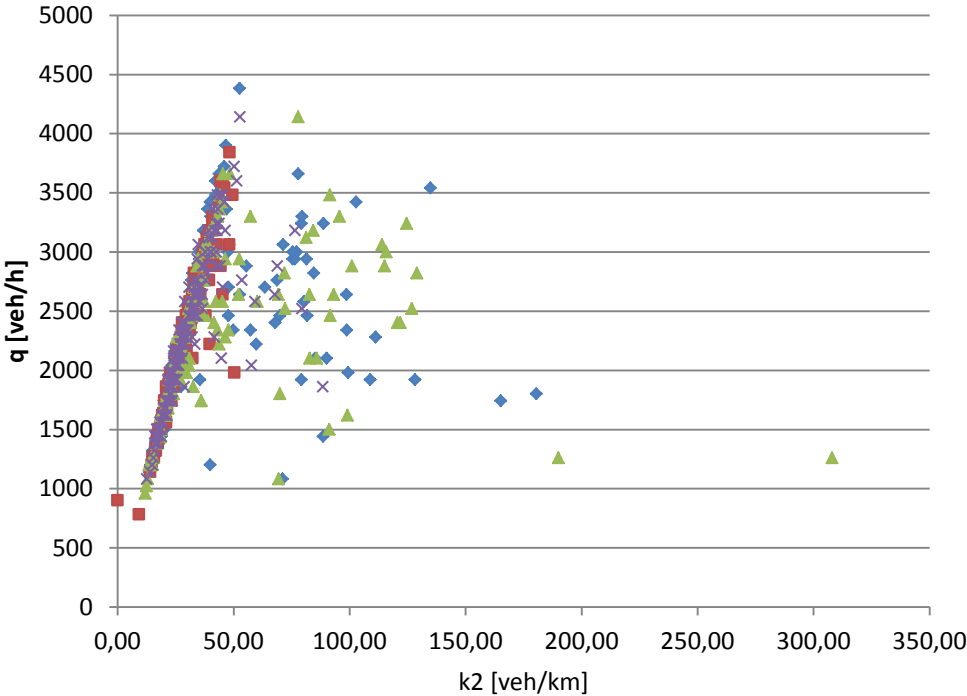
Fundamental Diagram s17_34



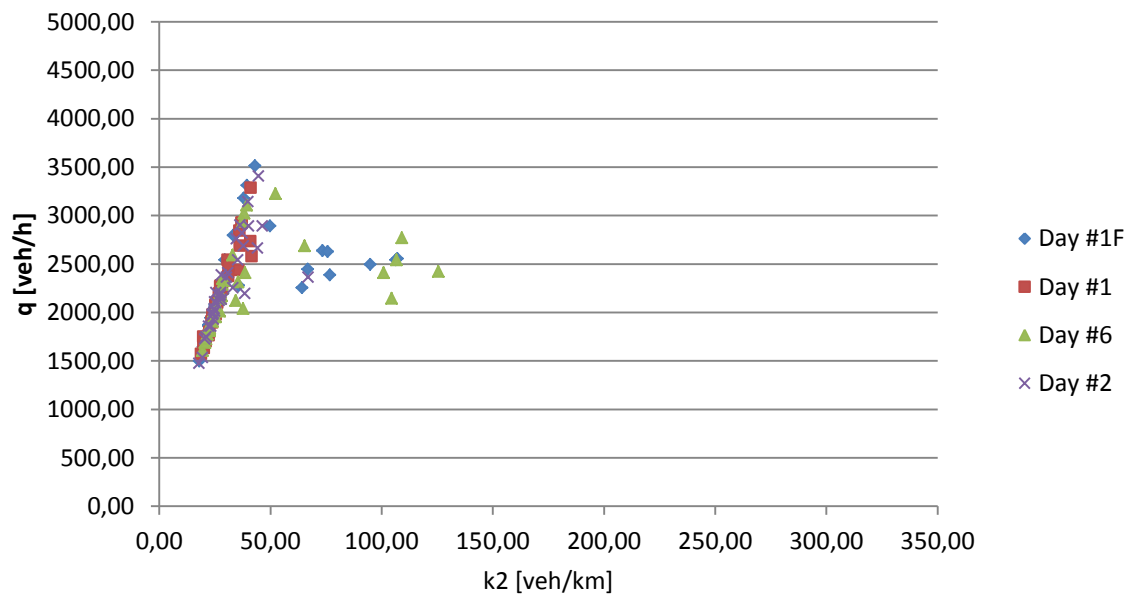
Fundamental Diagram s17_34 (5min)



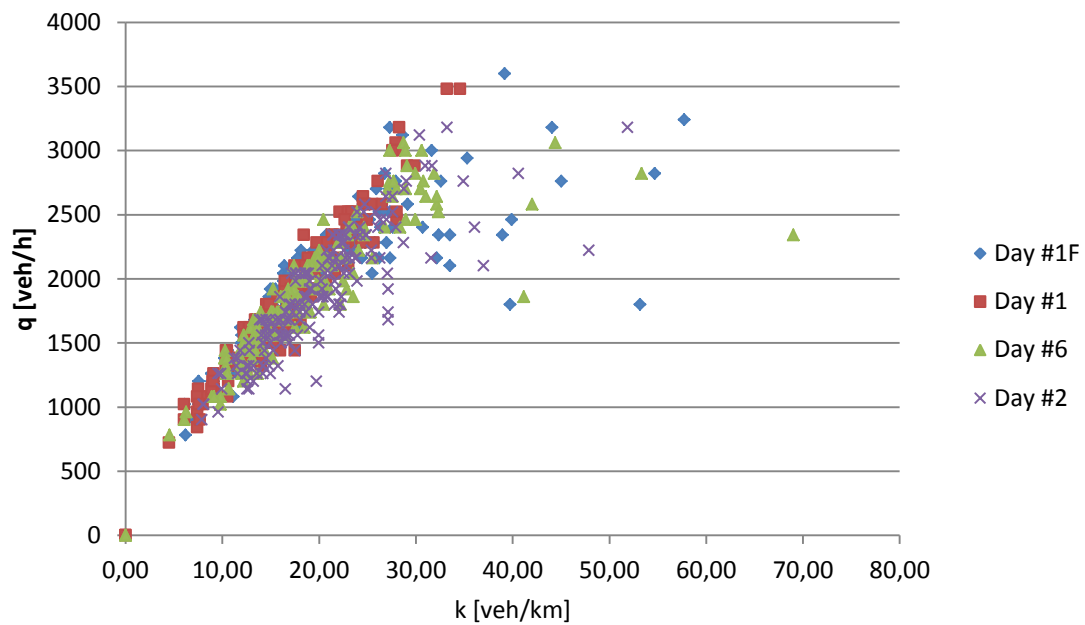
Fundamental Diagram s17_34



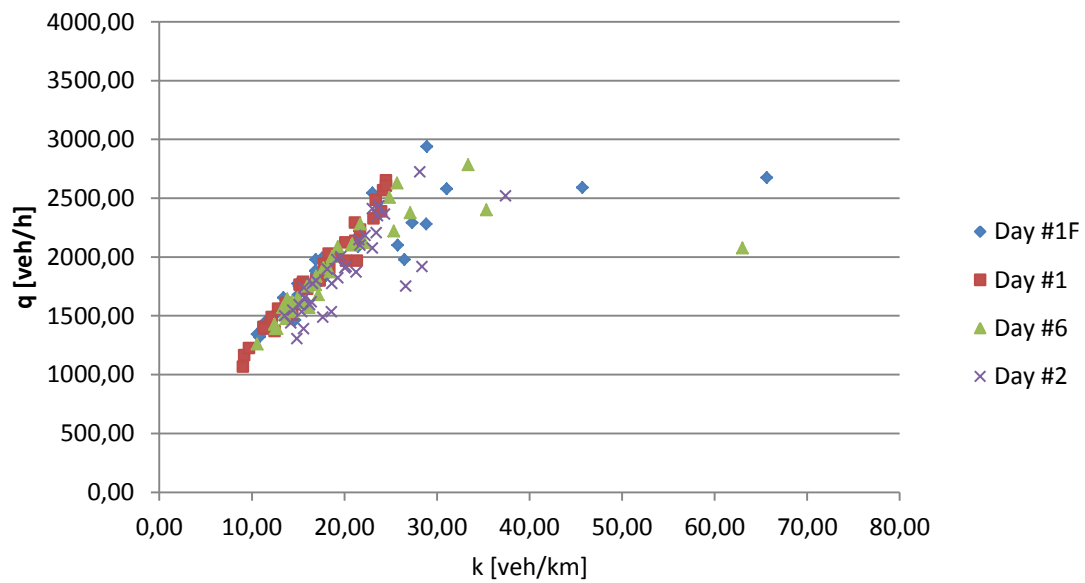
Fundamental Diagram s17_34 (5min)



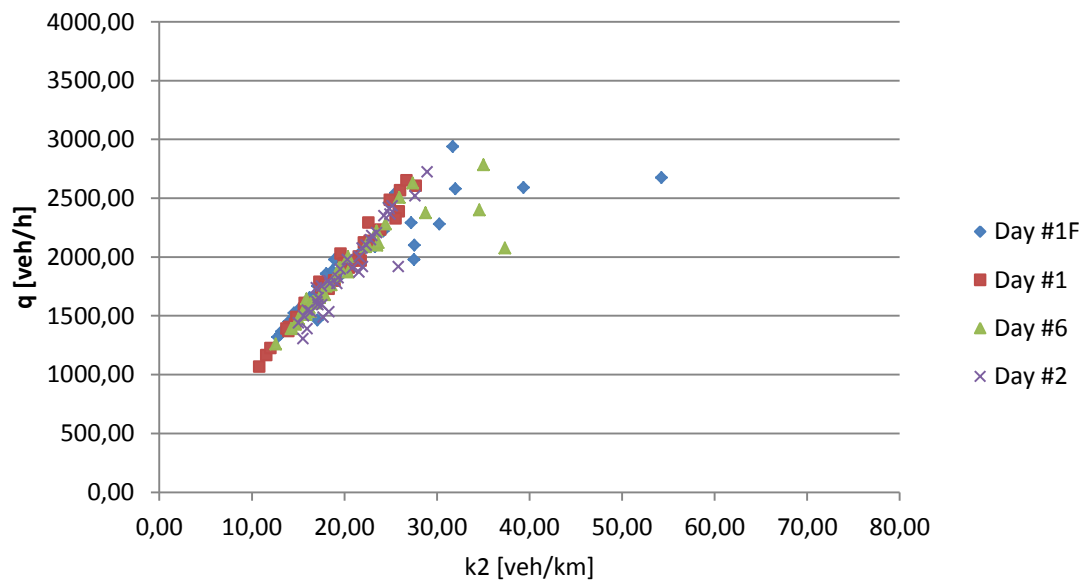
Fundamental Diagram s18



Fundamental Diagram s18 (5min)

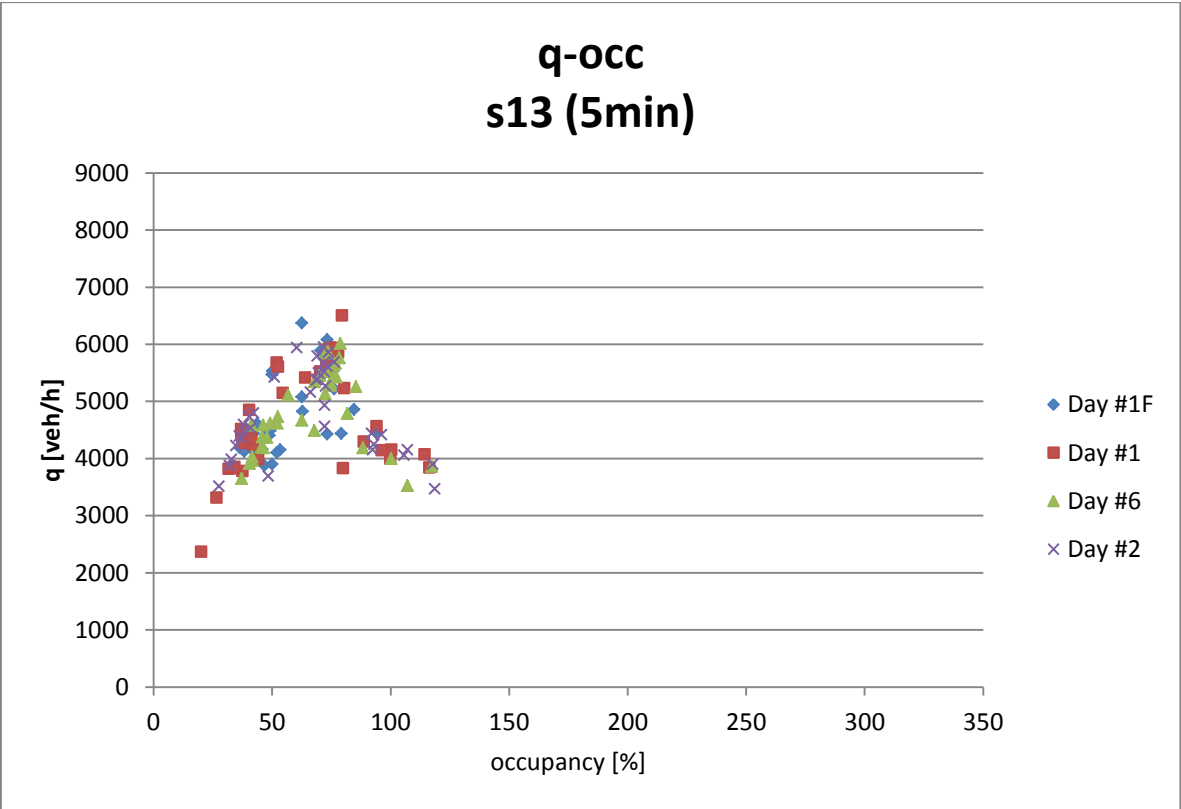
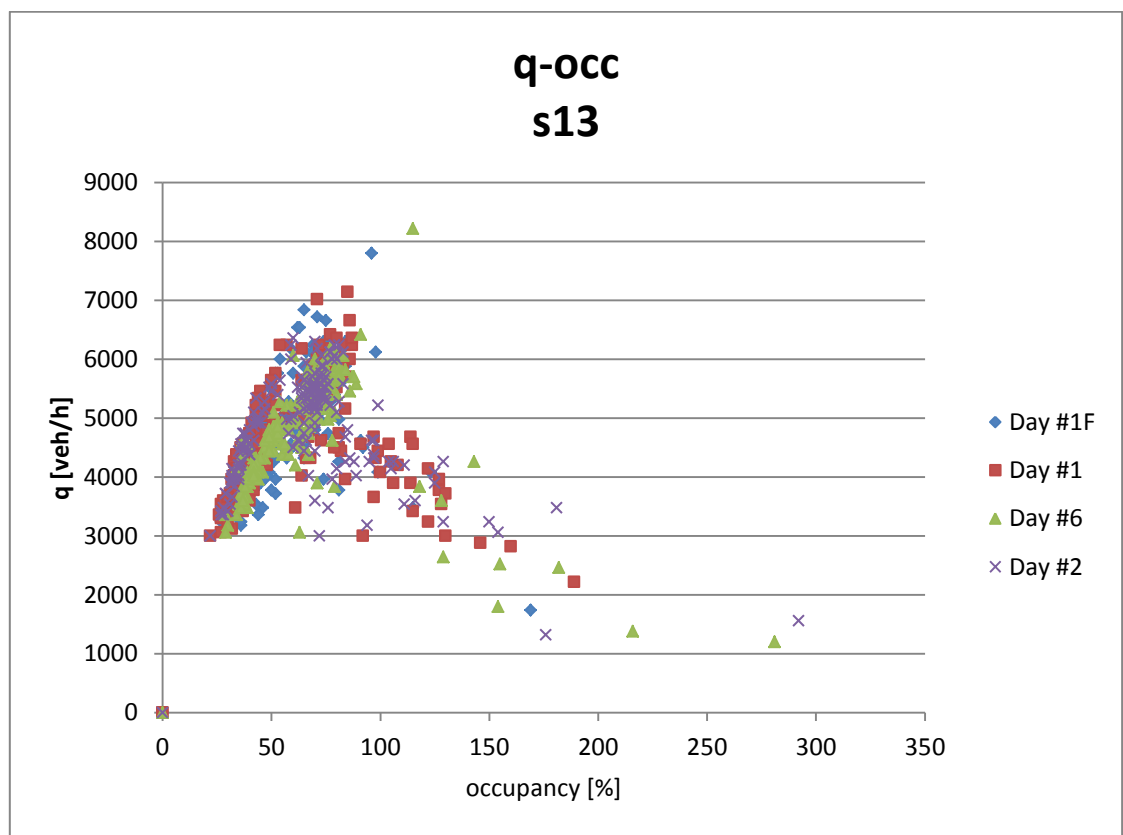


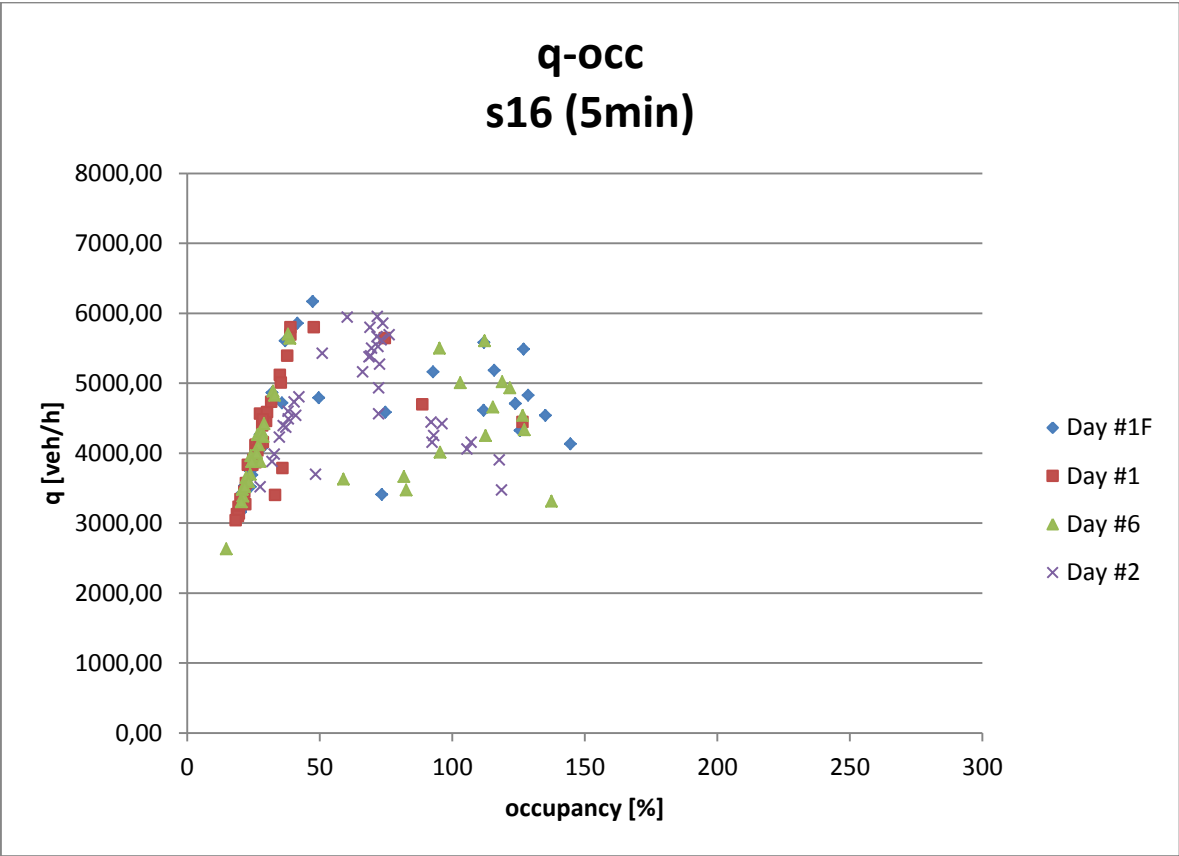
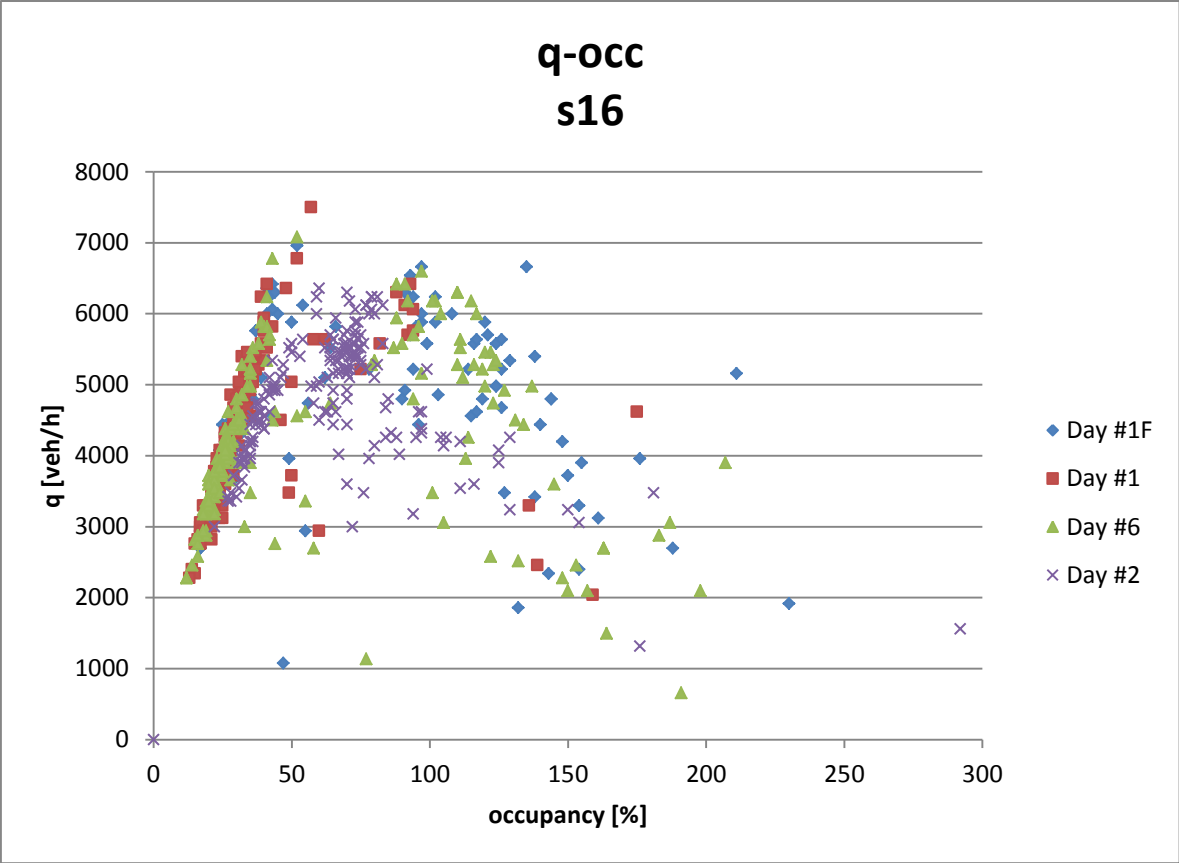
Fundamental Diagram s18 (5min)

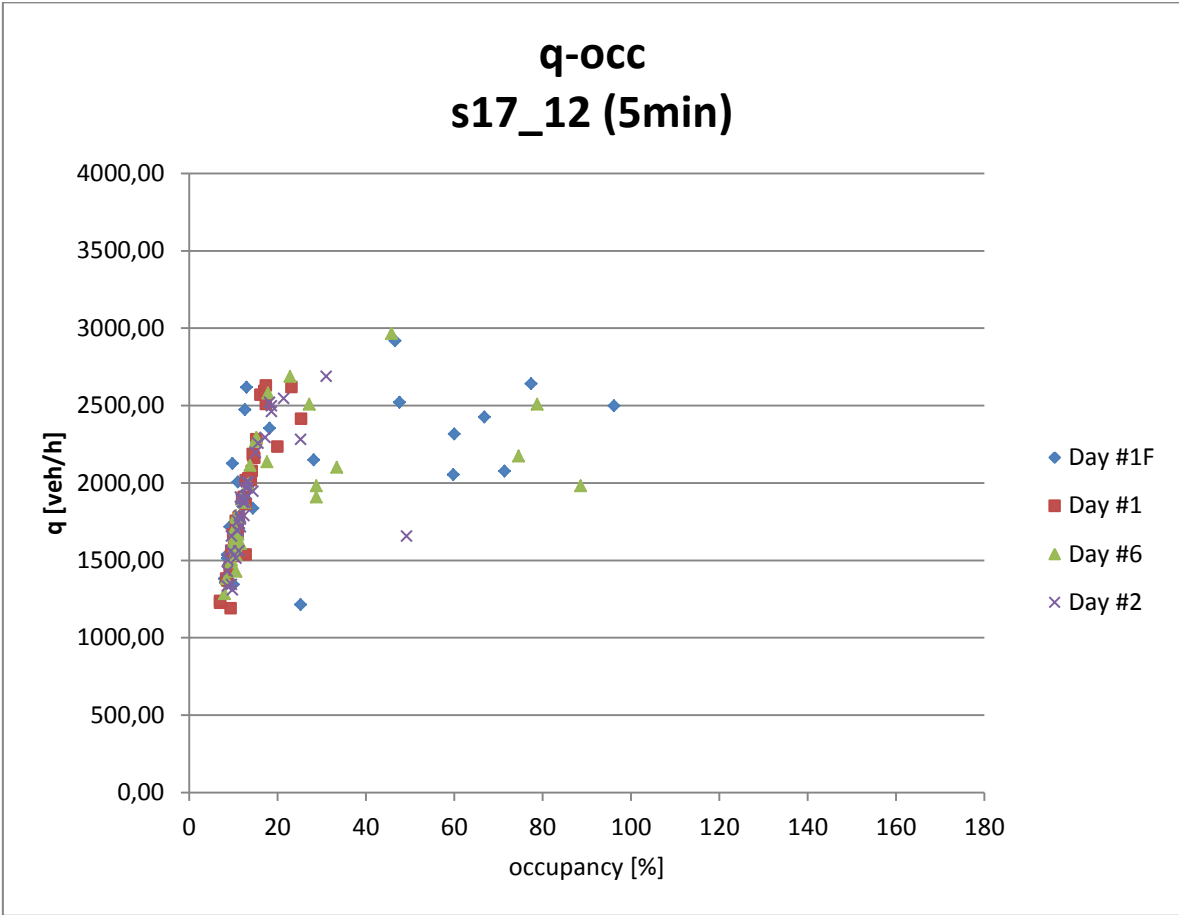
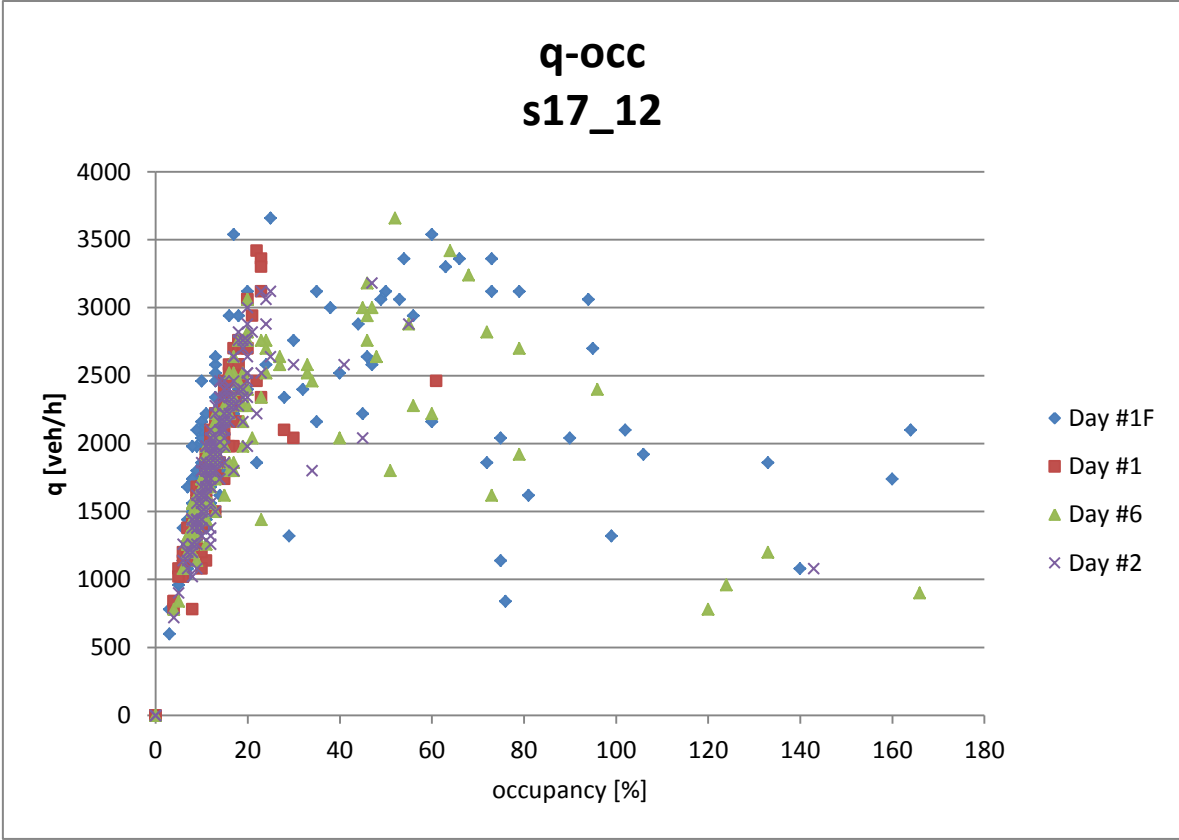


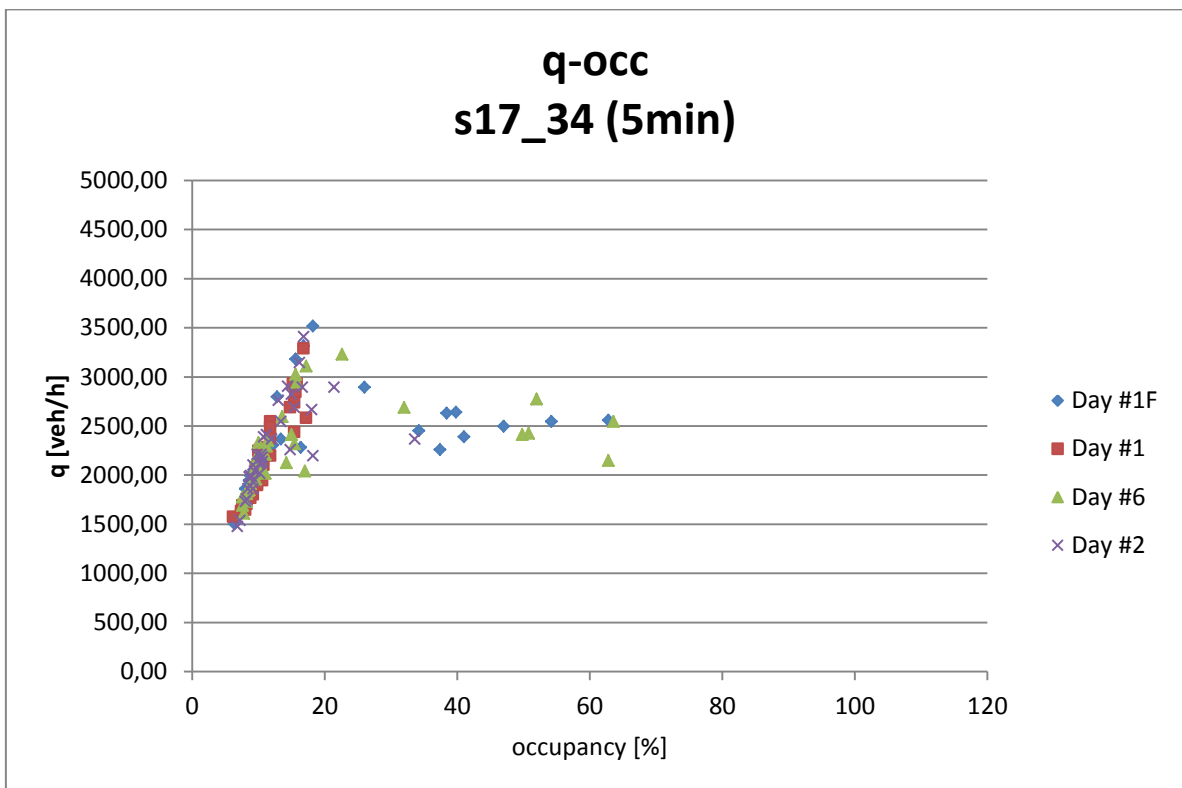
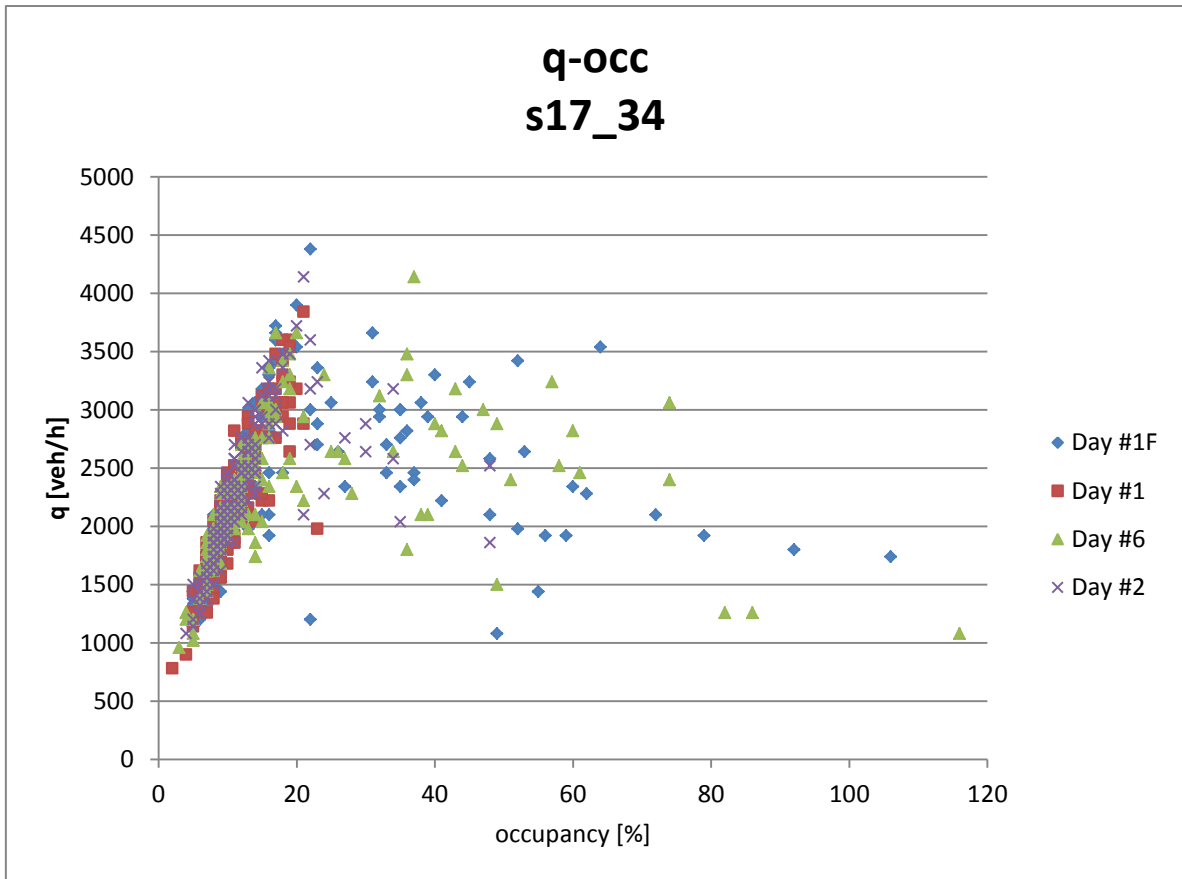
Annex 3: Flow-Occupancy

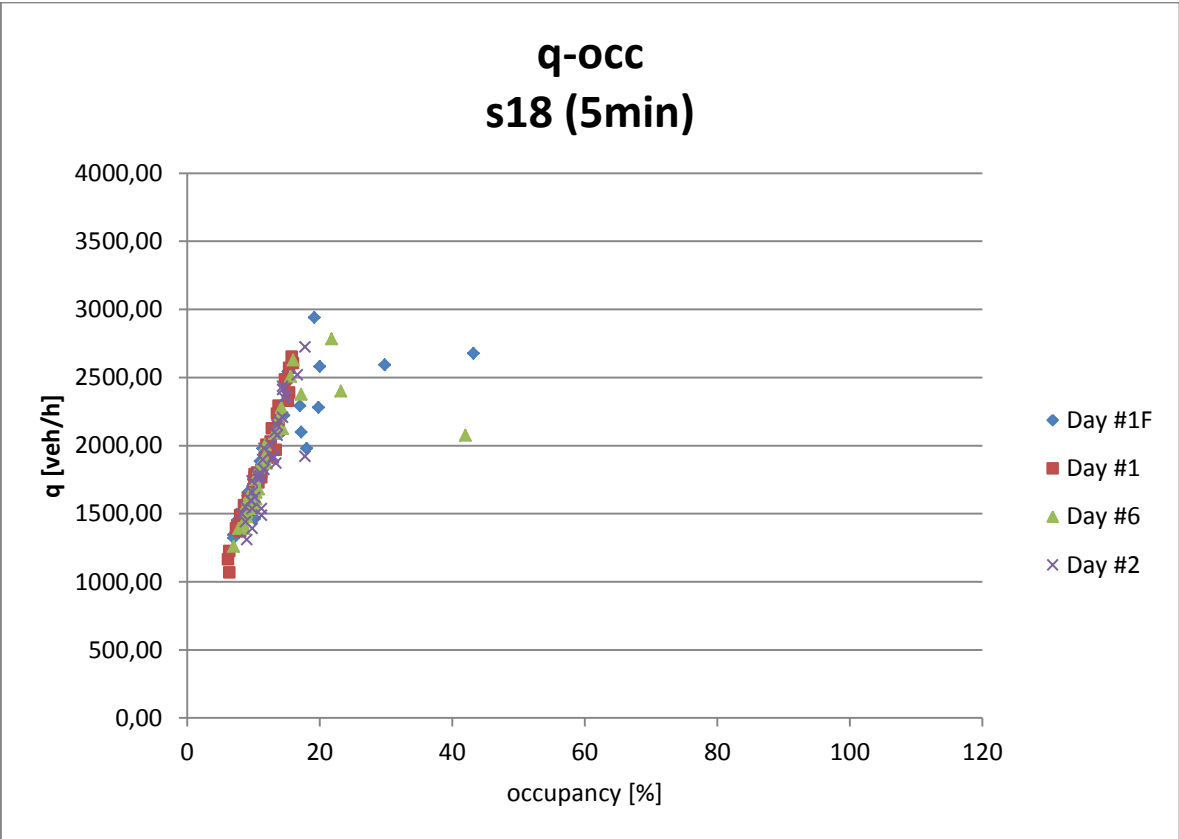
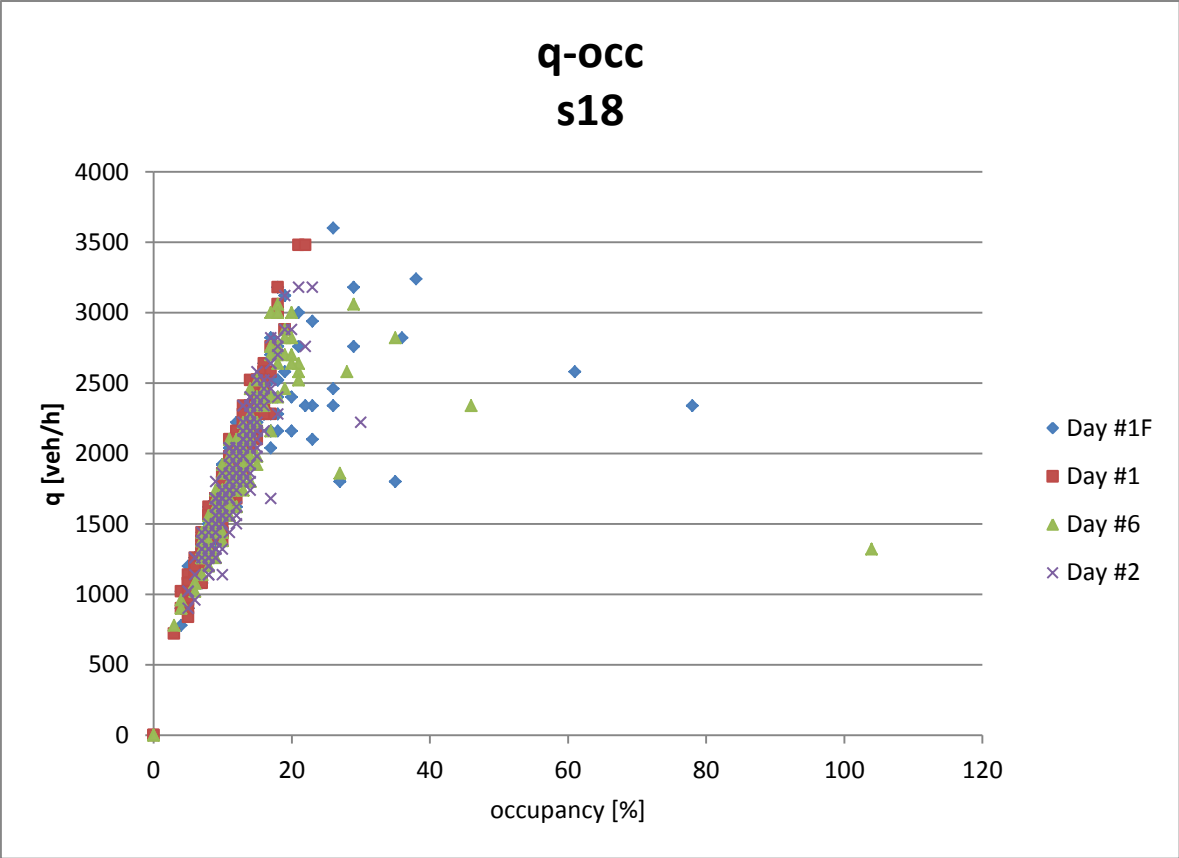
They are also presented for each section: q-occ, q-occ 5 minutes aggregation.





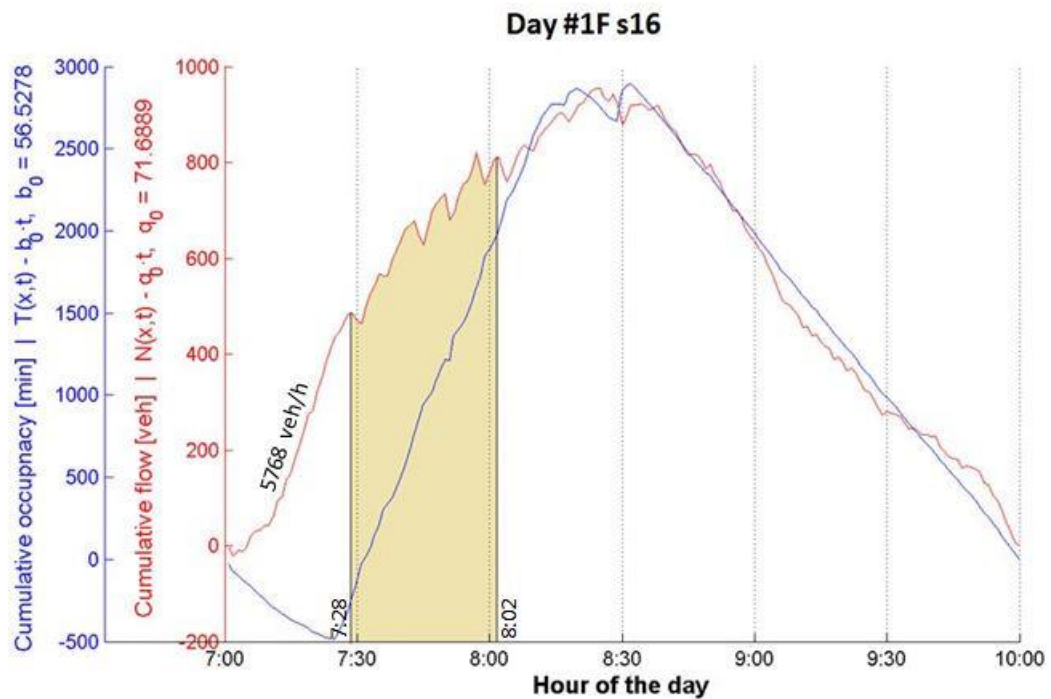
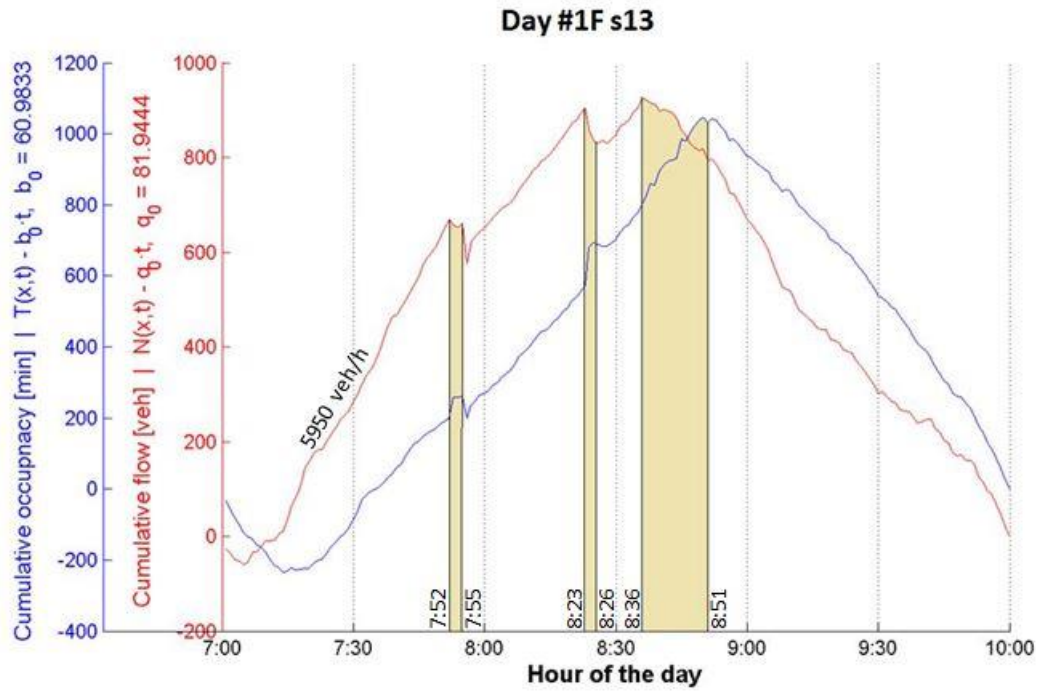




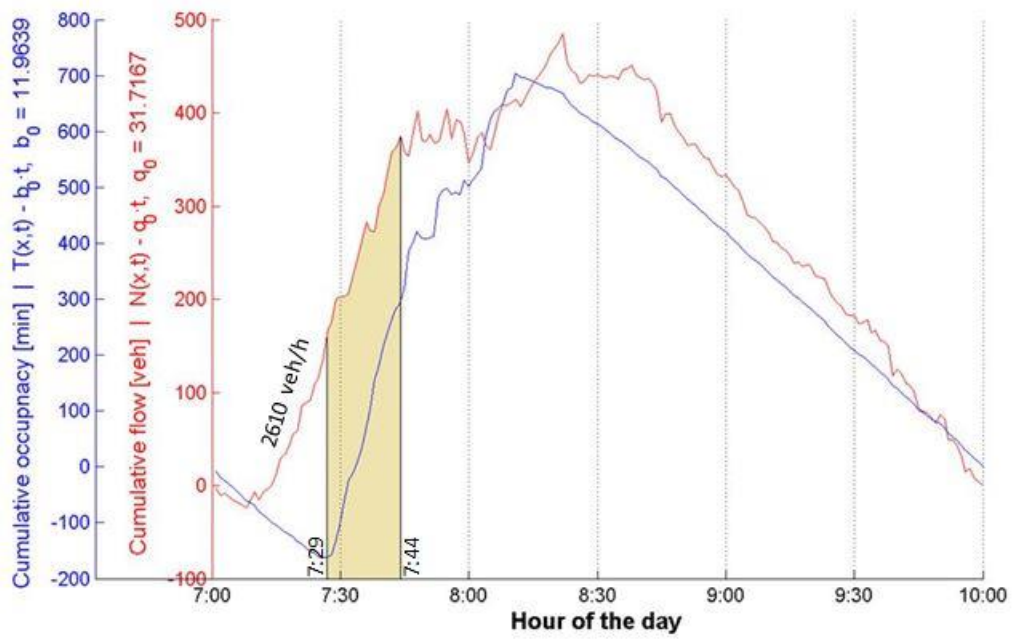


Annex 4: Oblique NT curves

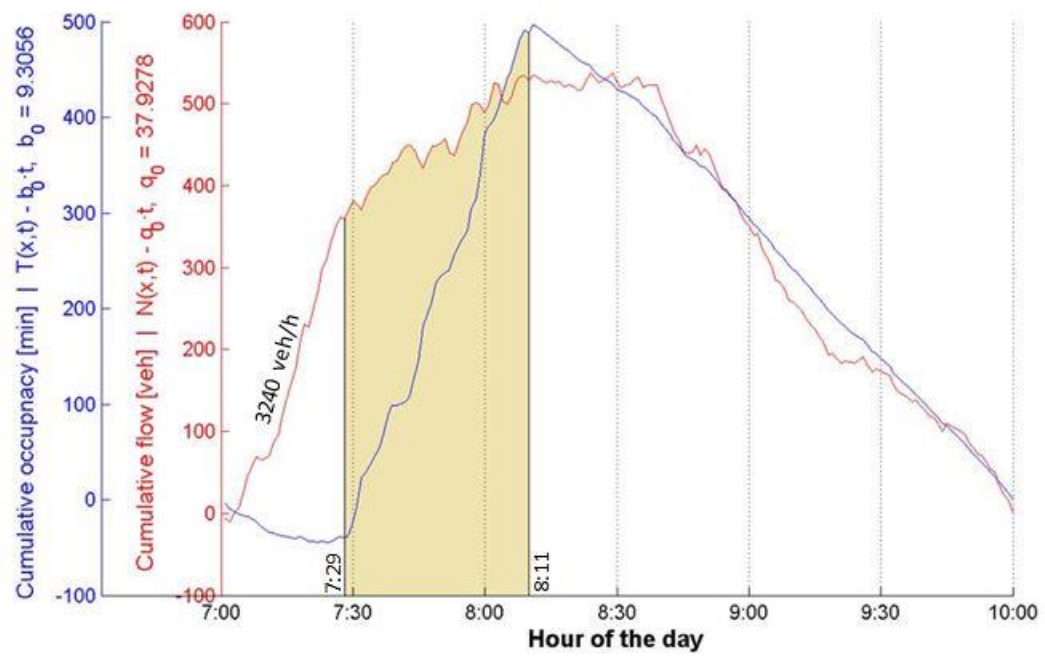
For each day, they section in this order: s13, s16, s17_12, s17_34 and s18, while the Days: Day #1F, Day #1, Day #2 and Day #6.



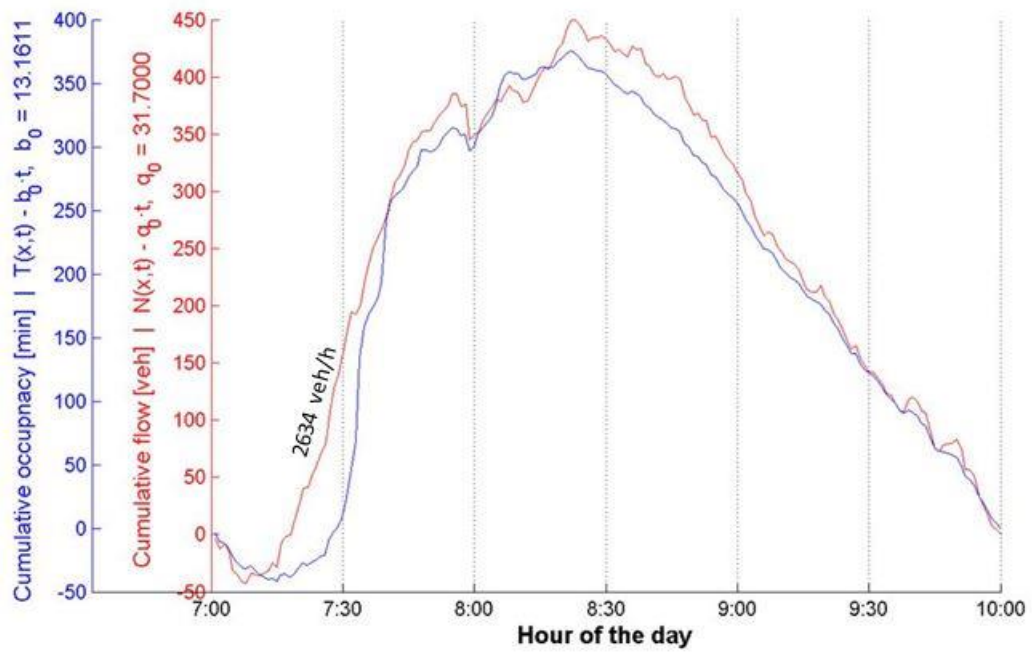
Day #1F s17_12



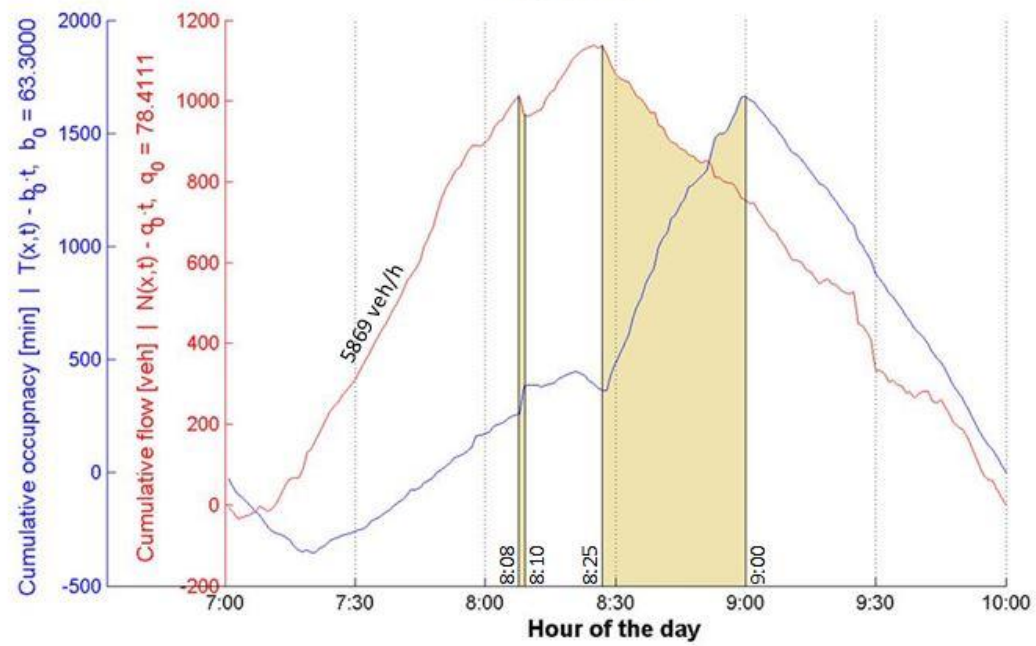
Day #1F s17_34

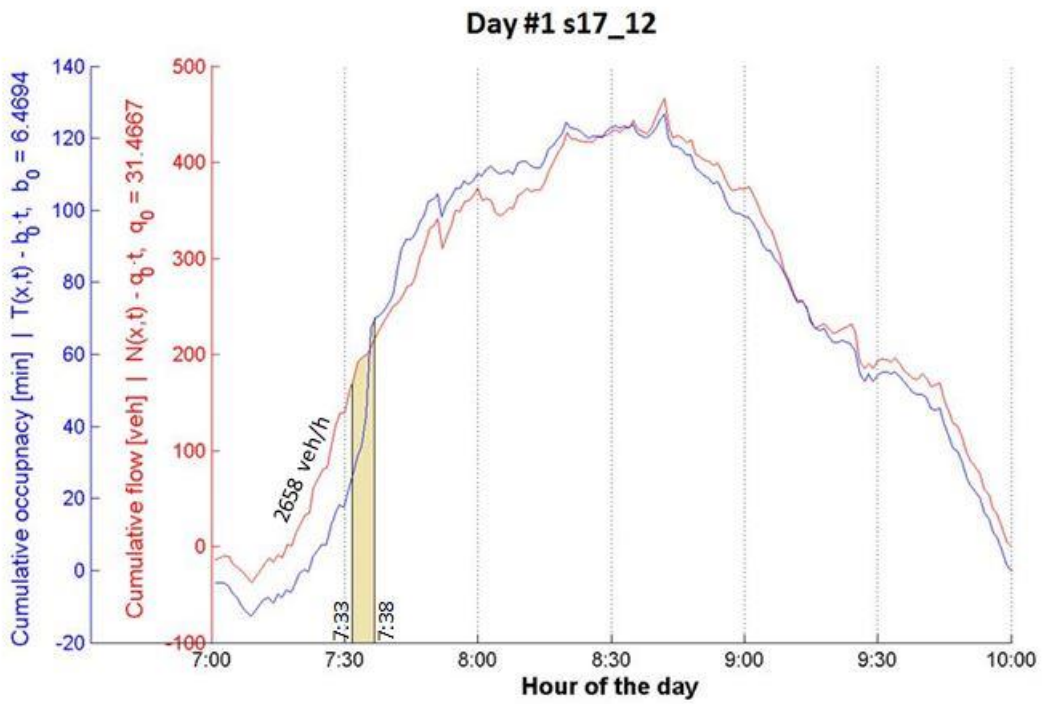
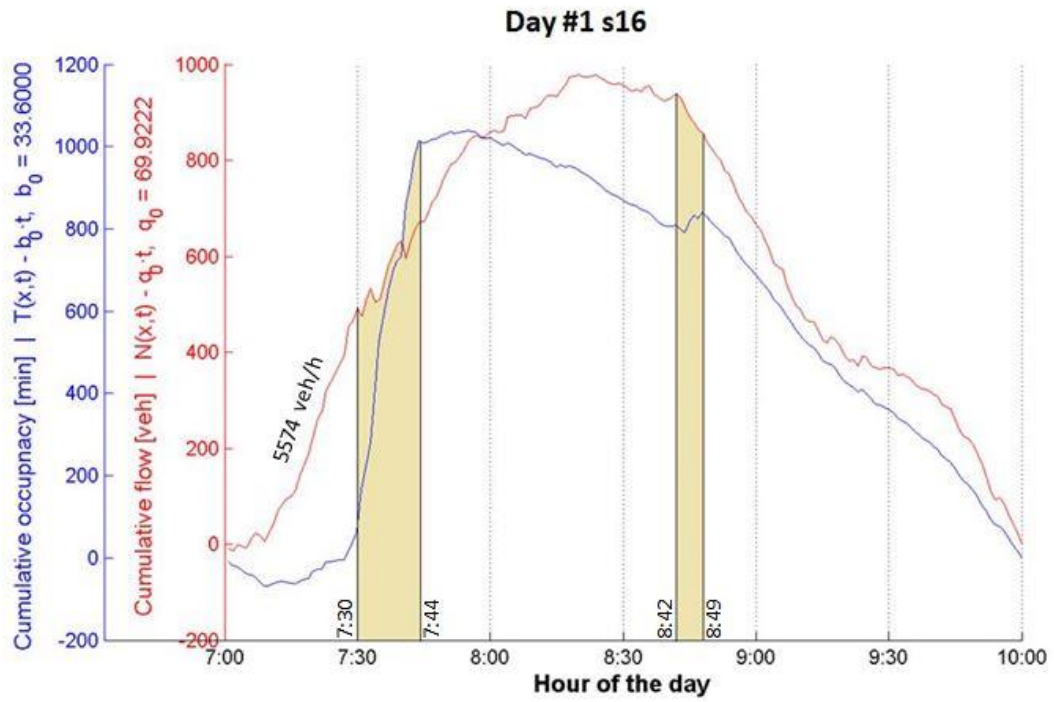


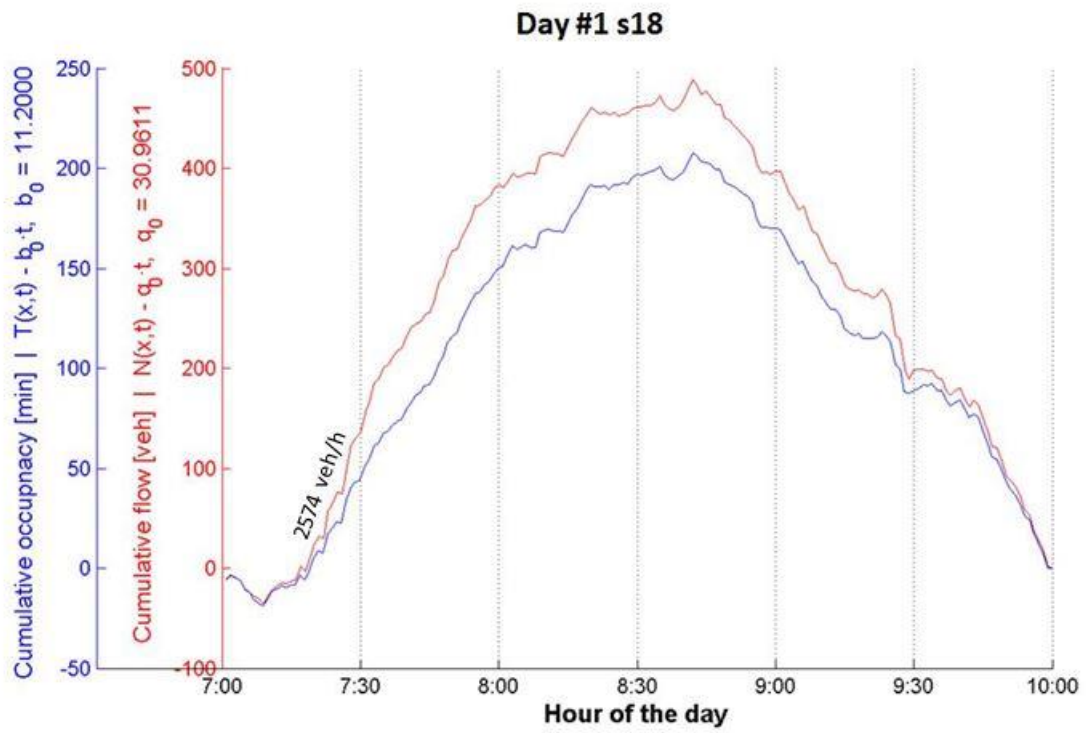
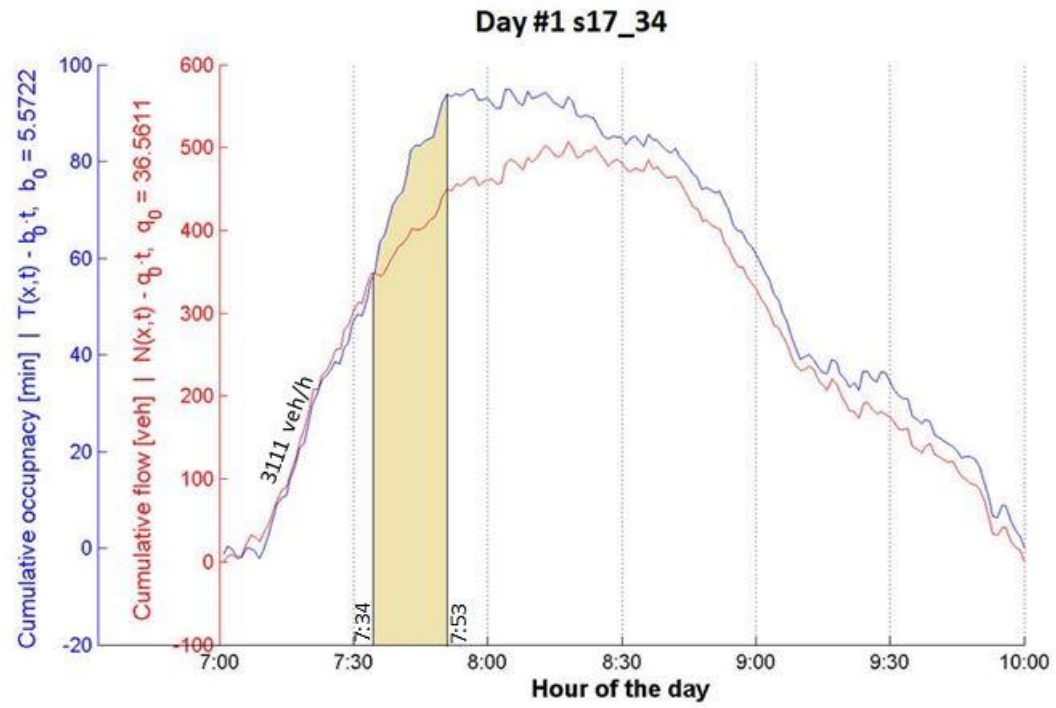
Day #1F s18



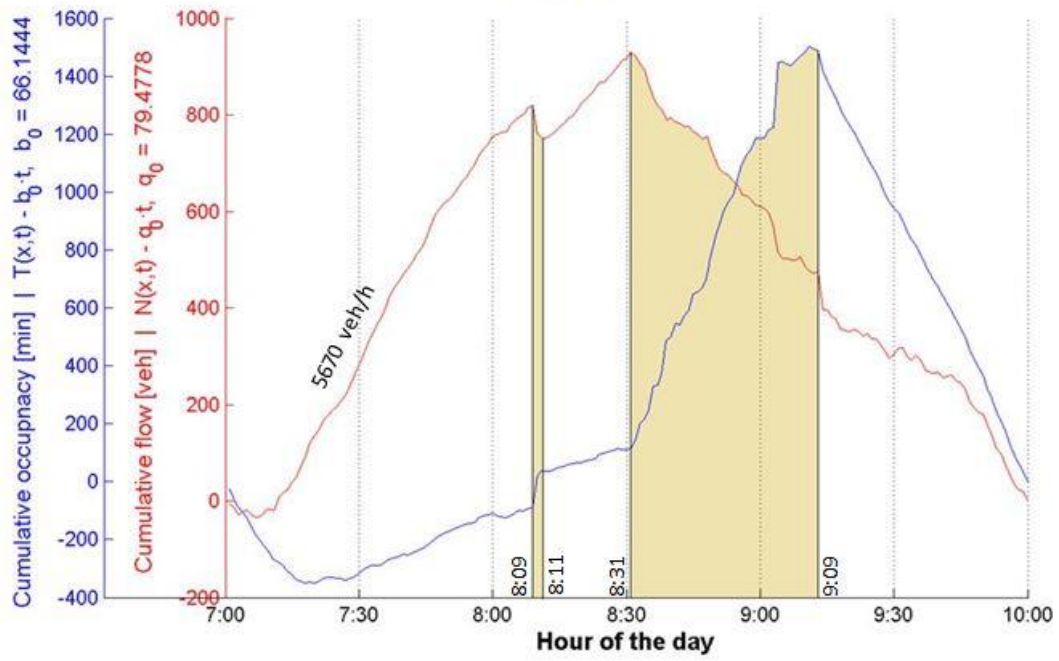
Day #1 s13



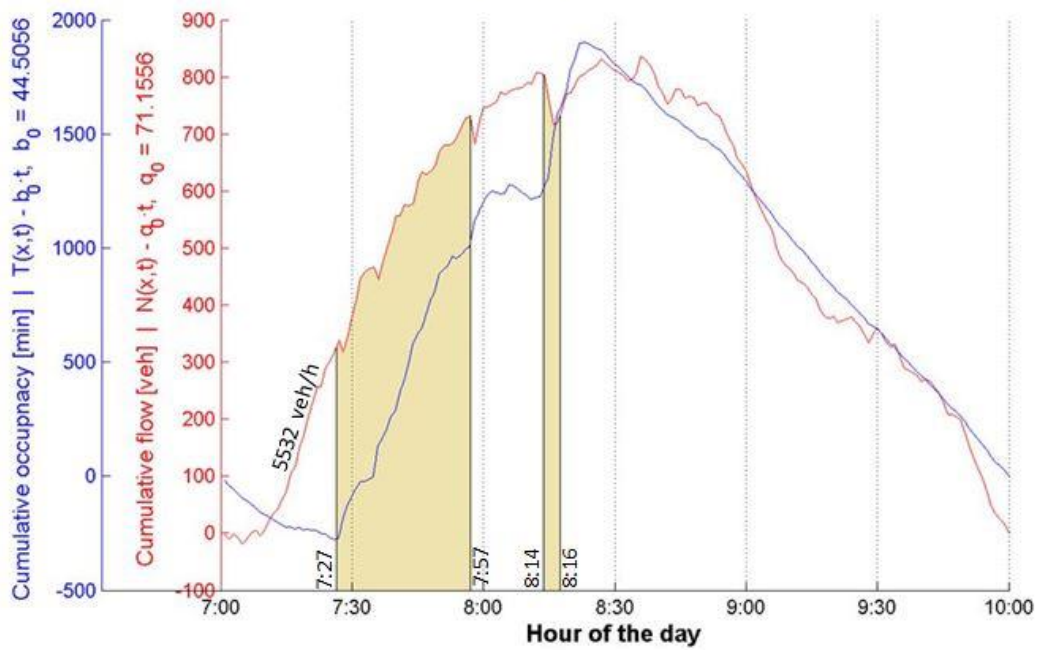




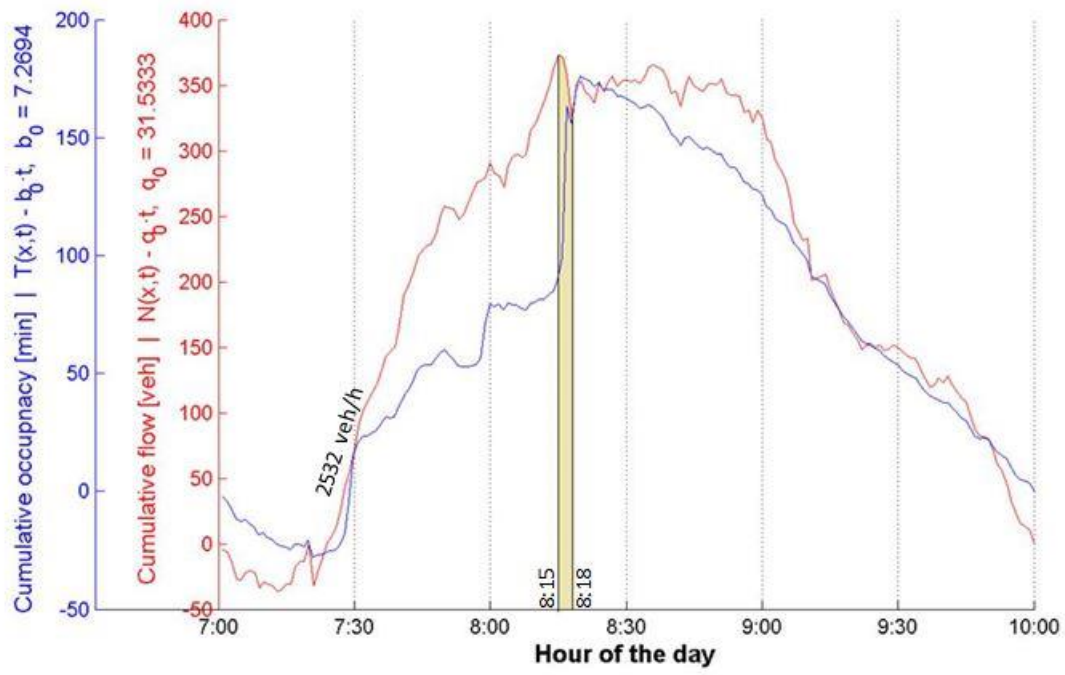
Day #2 s13



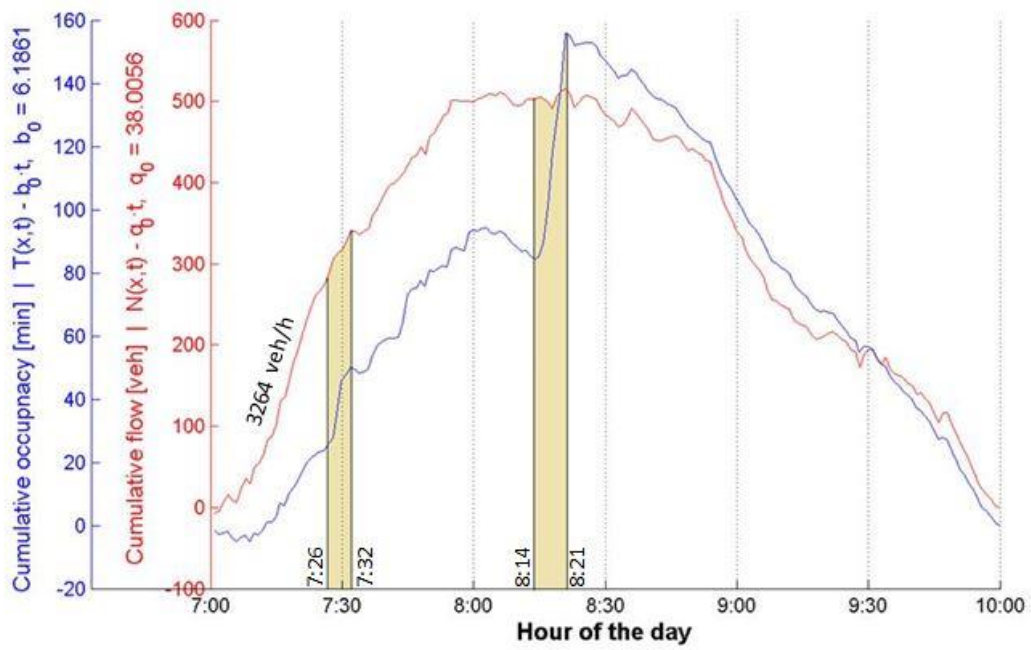
Day #2 s16



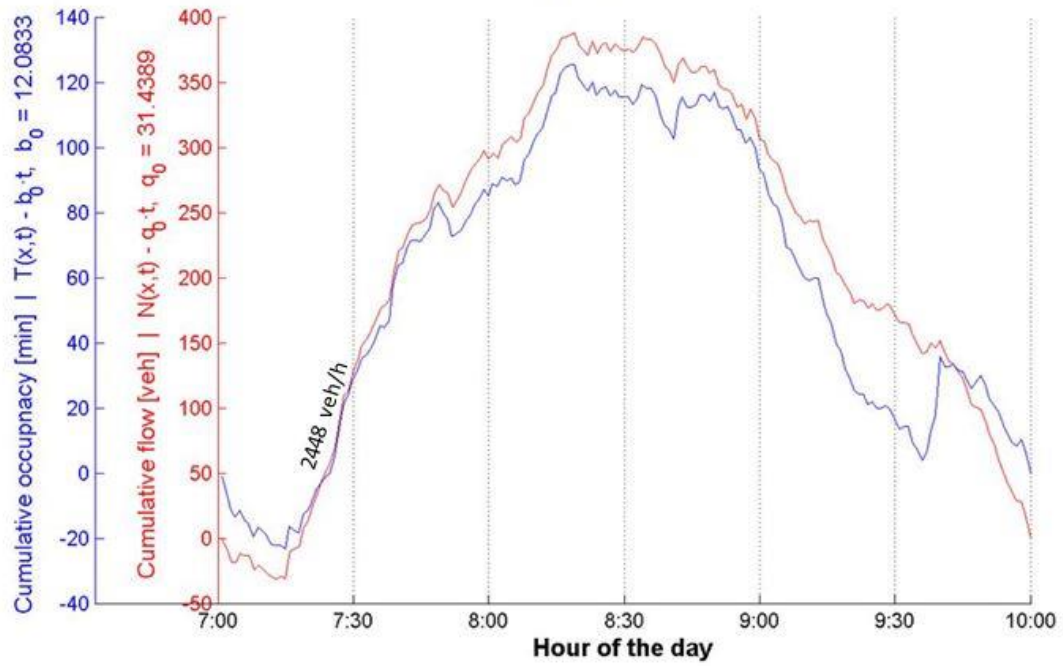
Day #2 s17_12



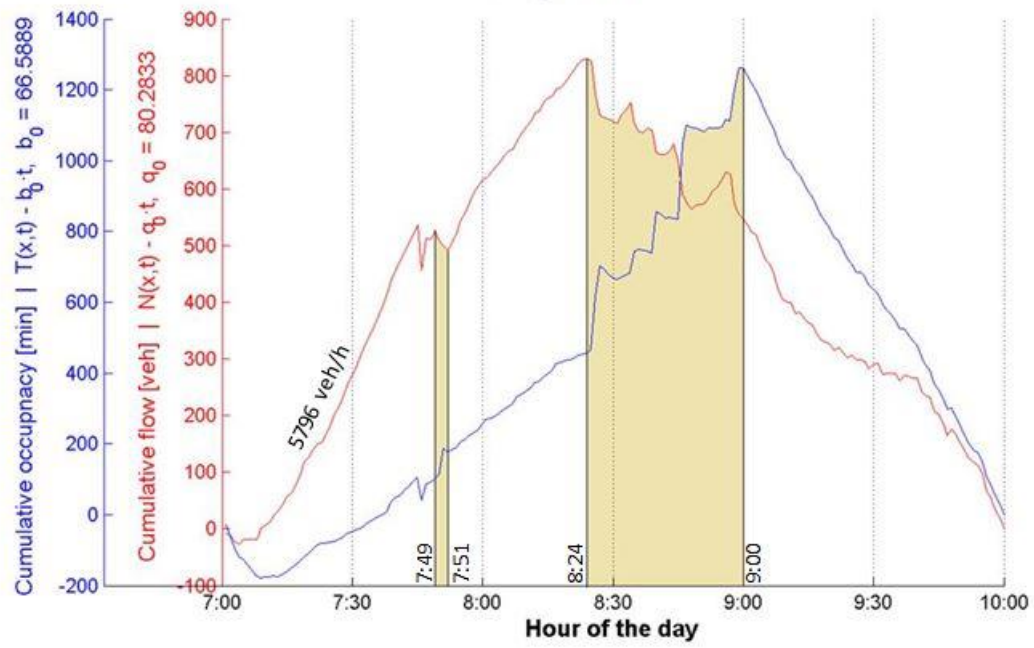
Day #2 s17_34



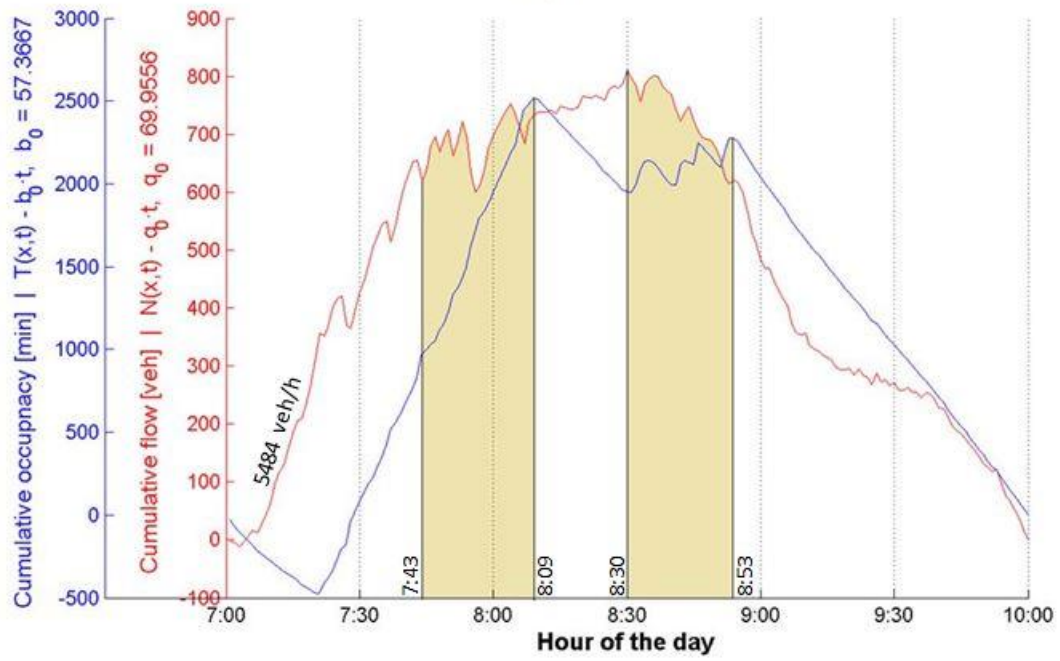
Day #2 s18



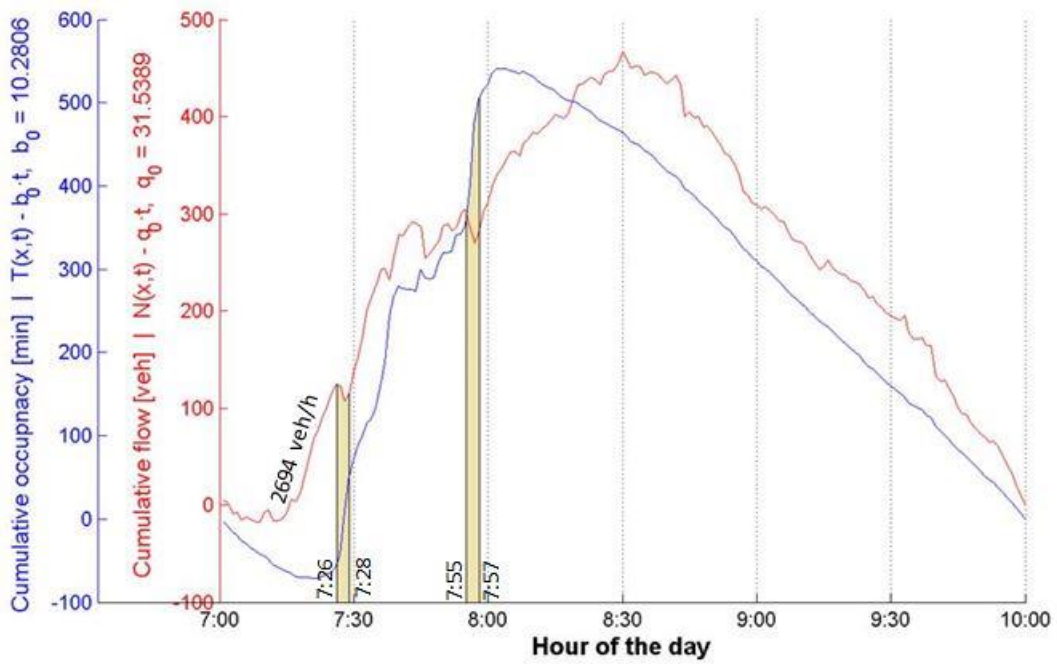
Day #6 s13

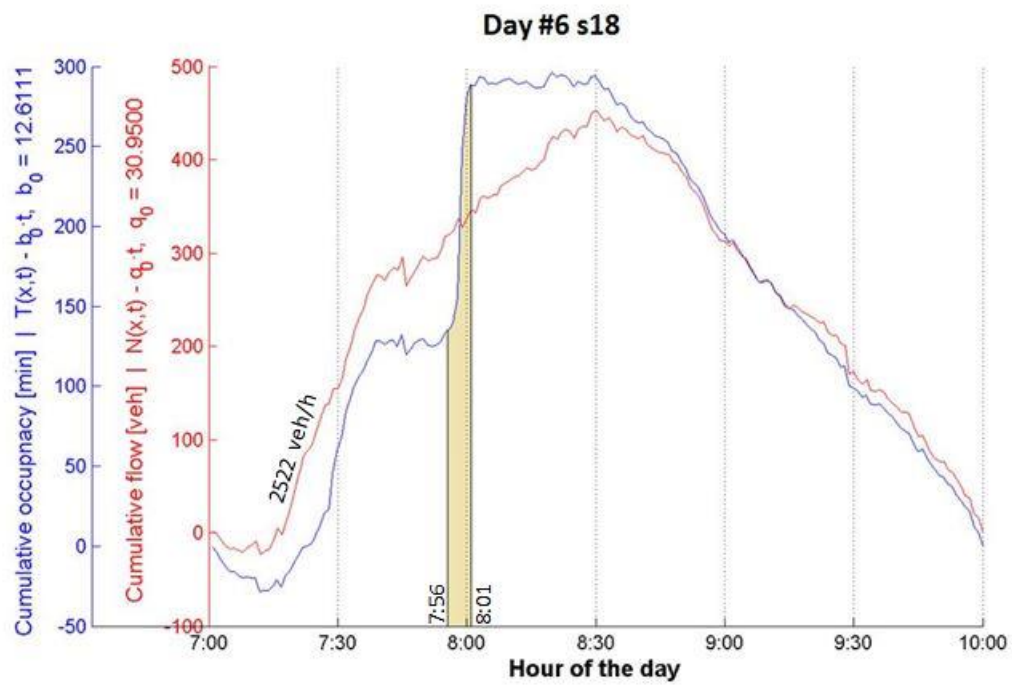
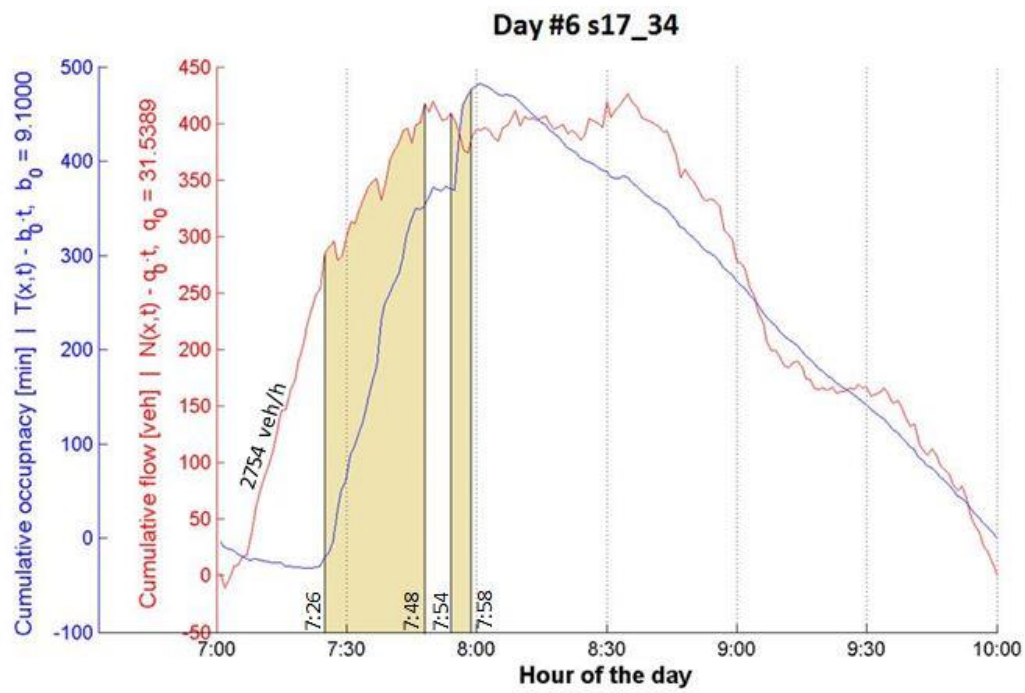


Day #6 s16



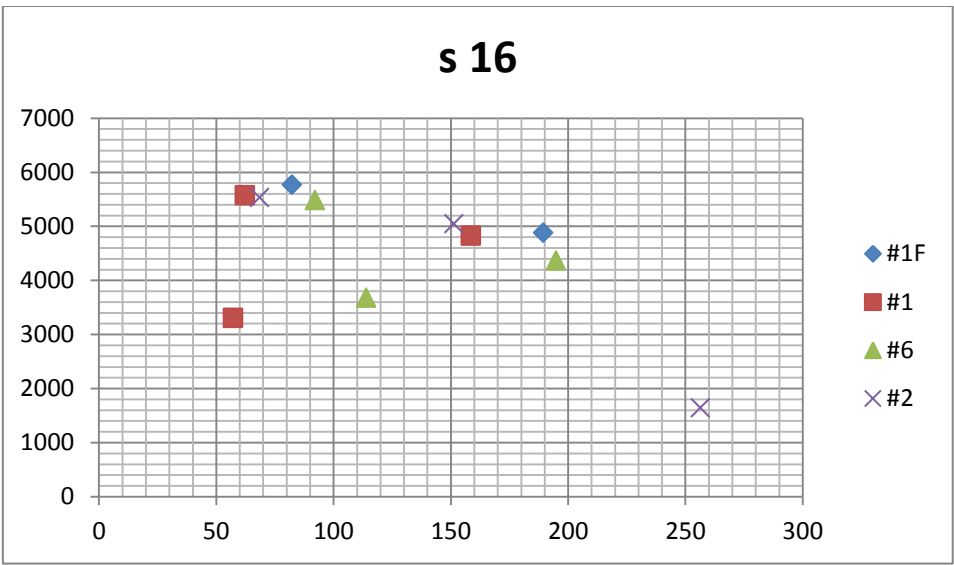
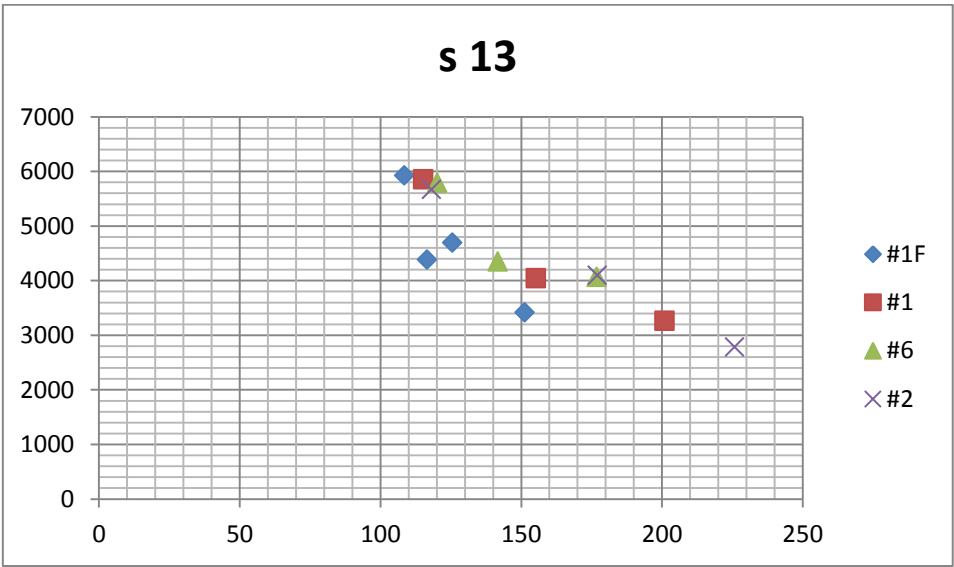
Day #6 s17_12

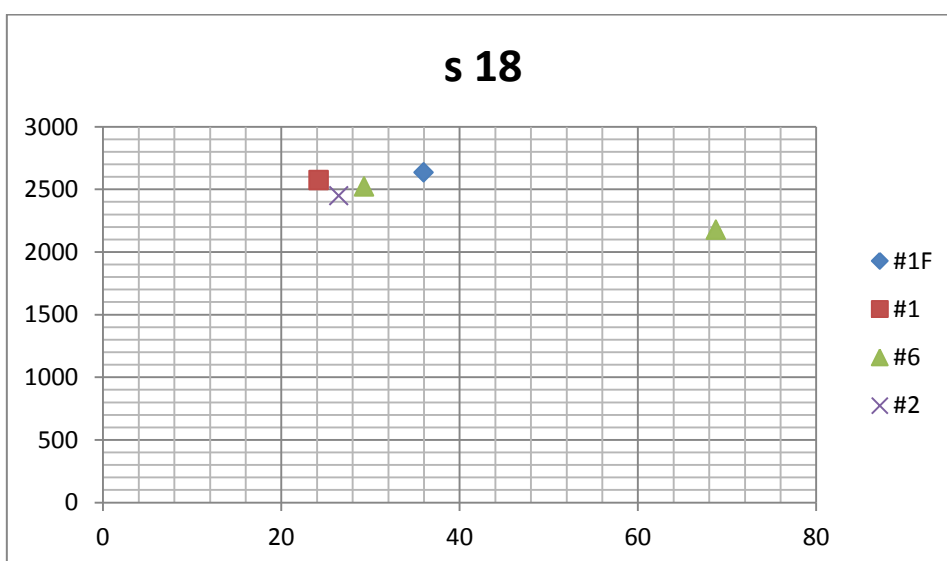
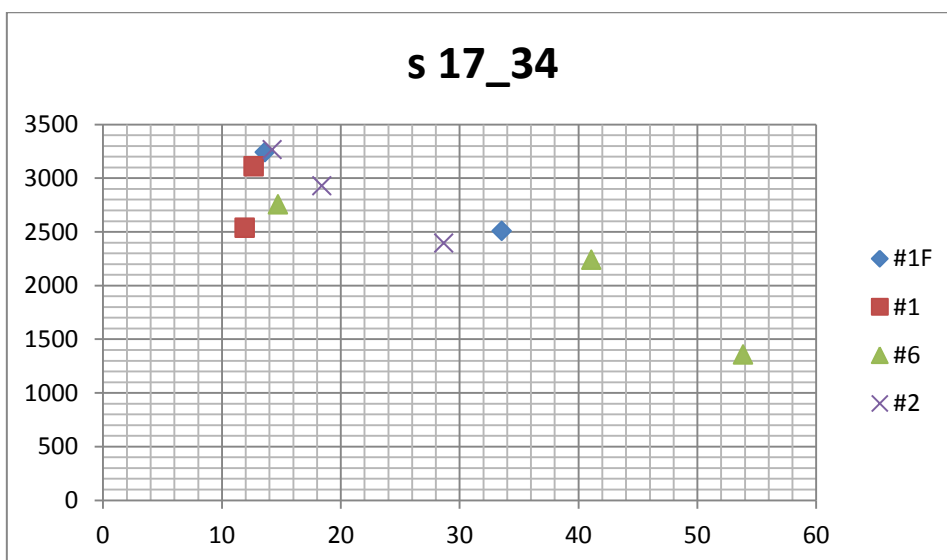
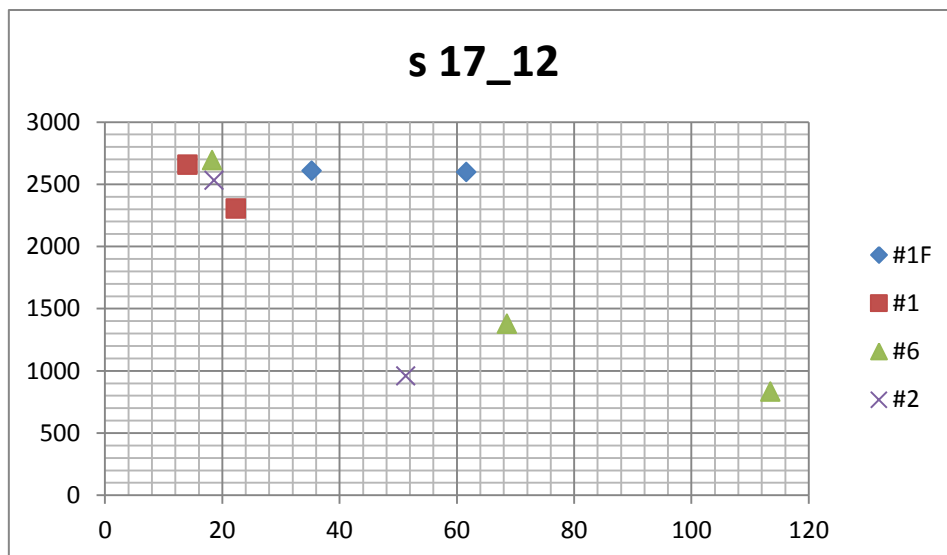




Annex 5: Shock wave propagation (w)

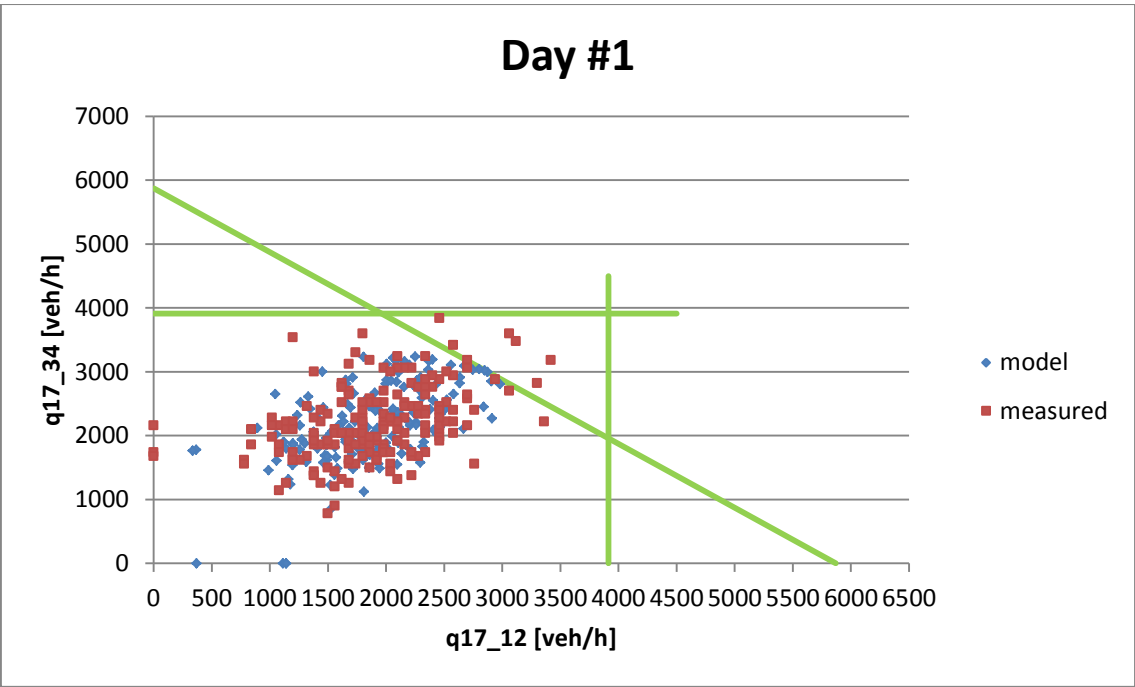
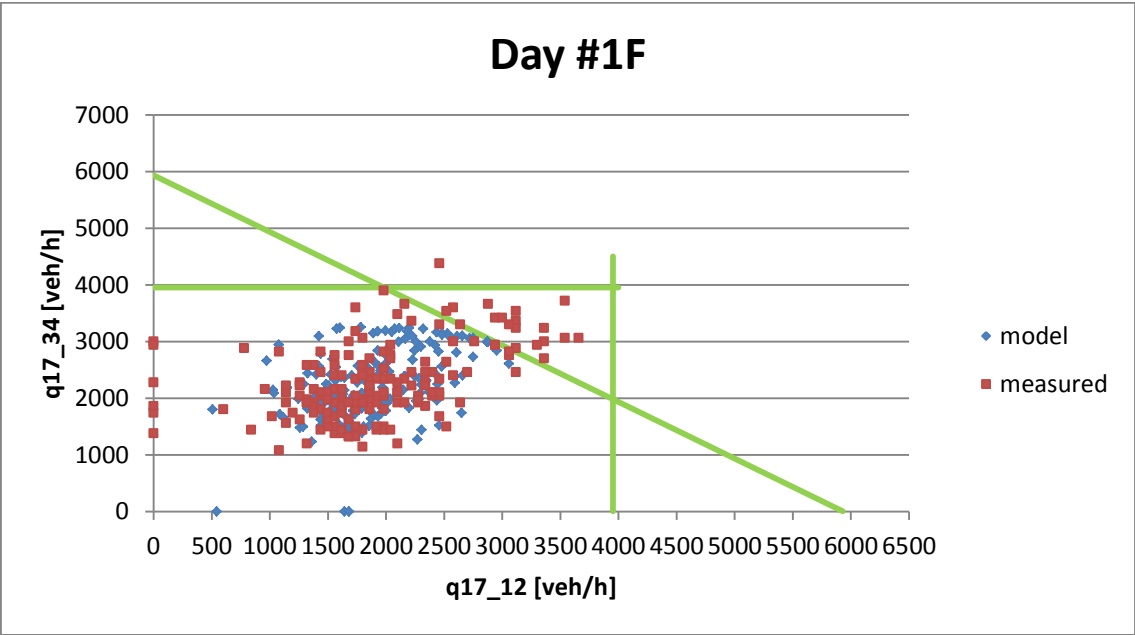
The same order for the sections as before.



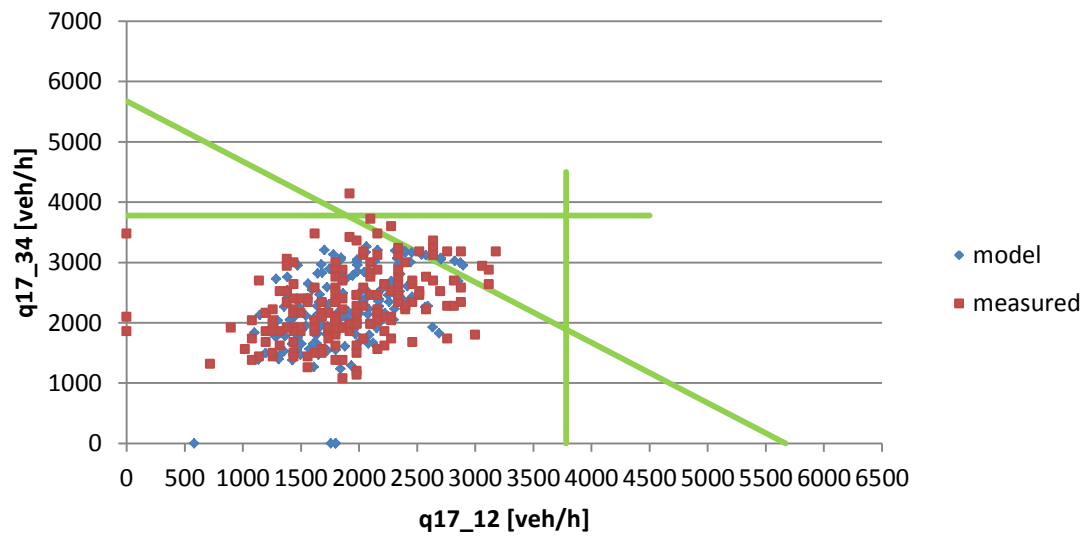


Model Validation & Results

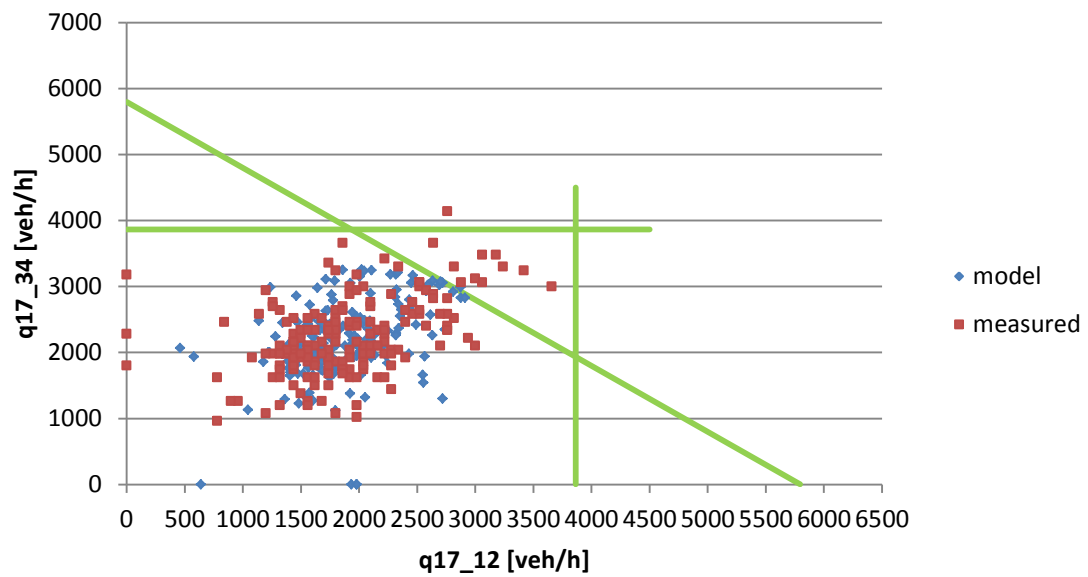
Annex 6: s17 flows



Day #2

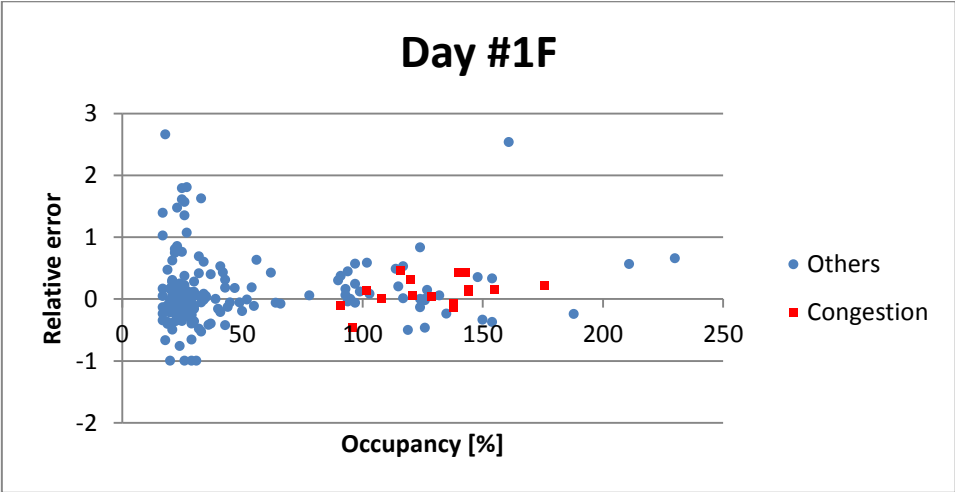
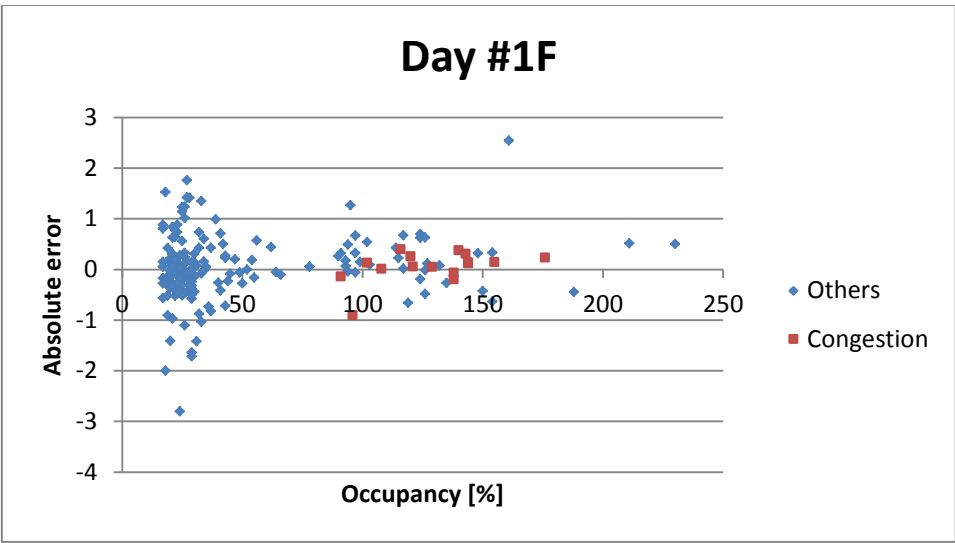
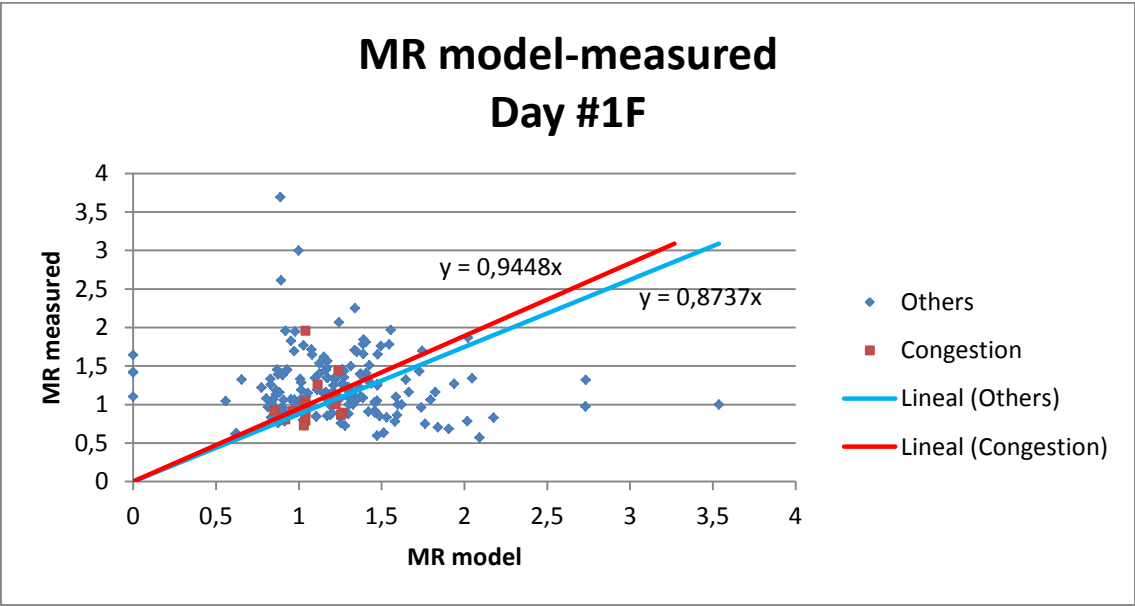


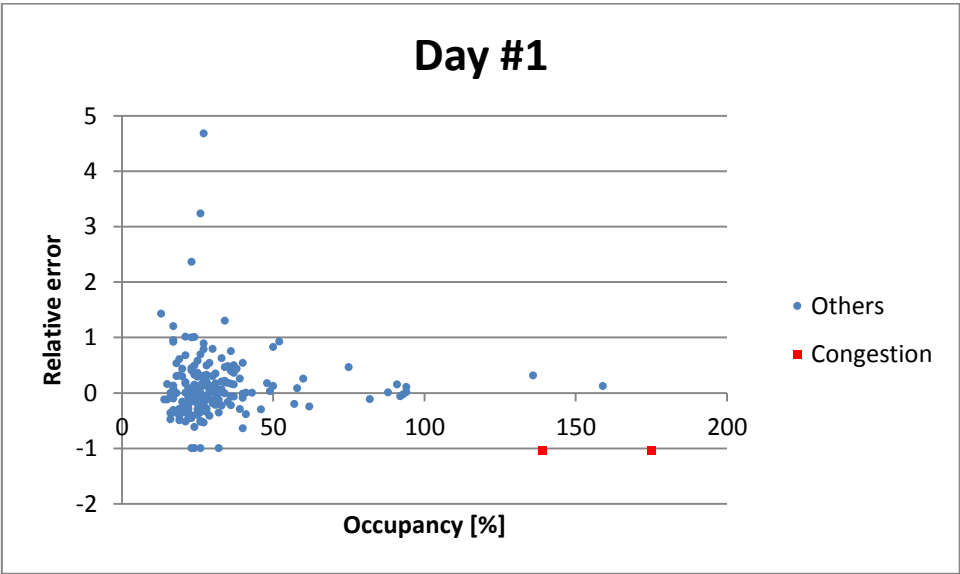
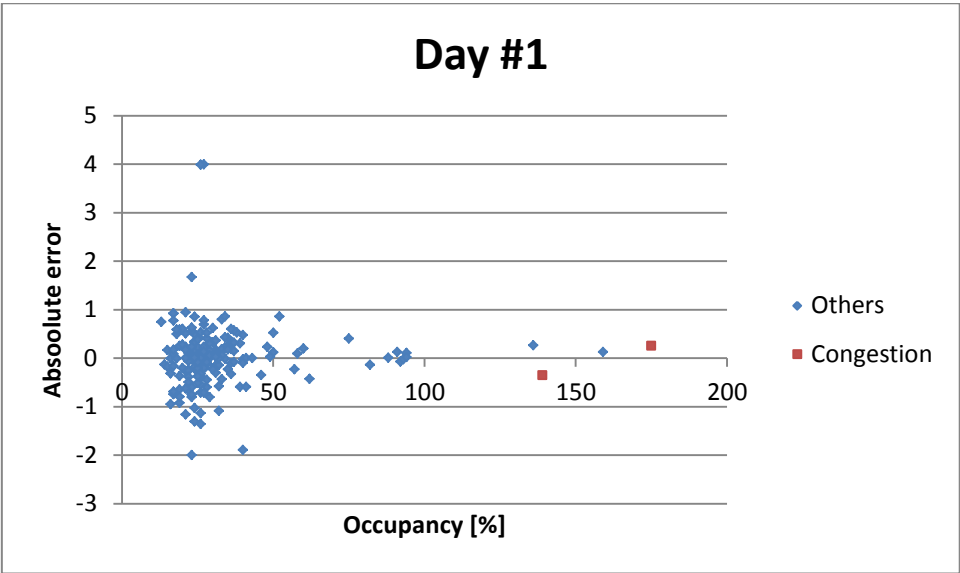
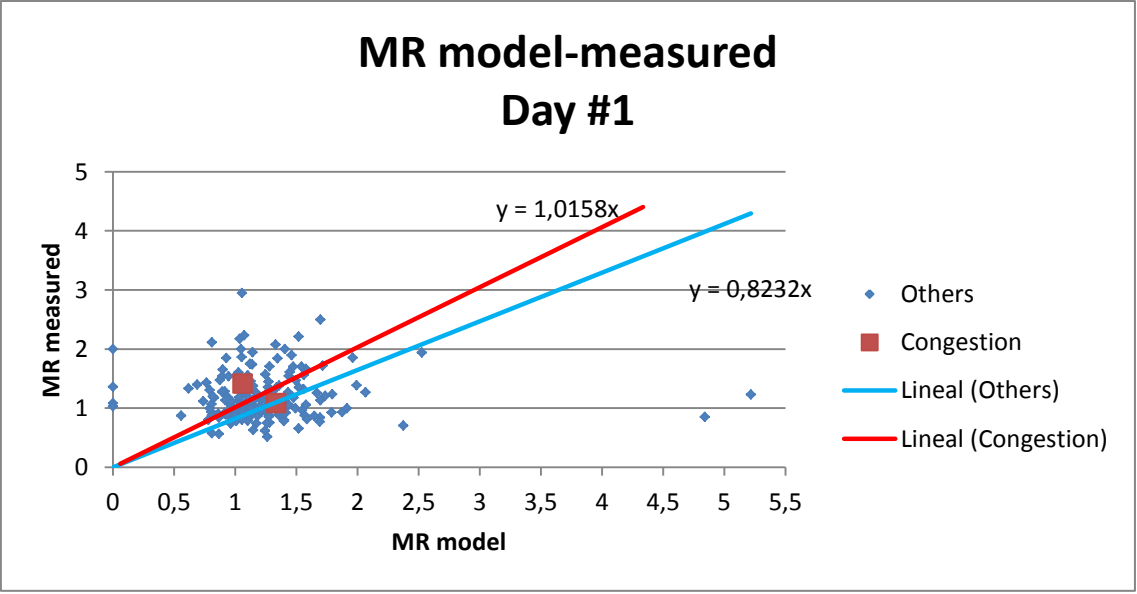
Day #6

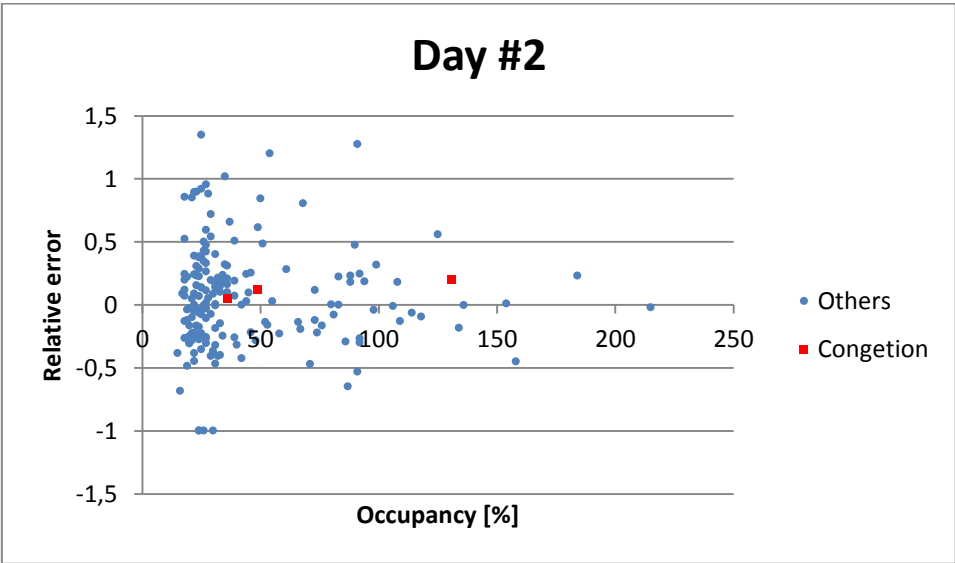
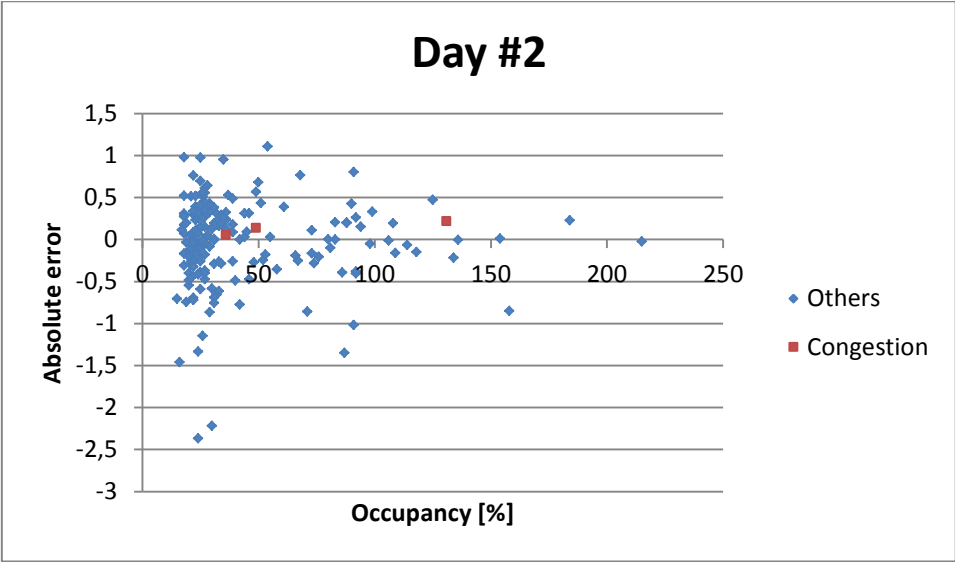
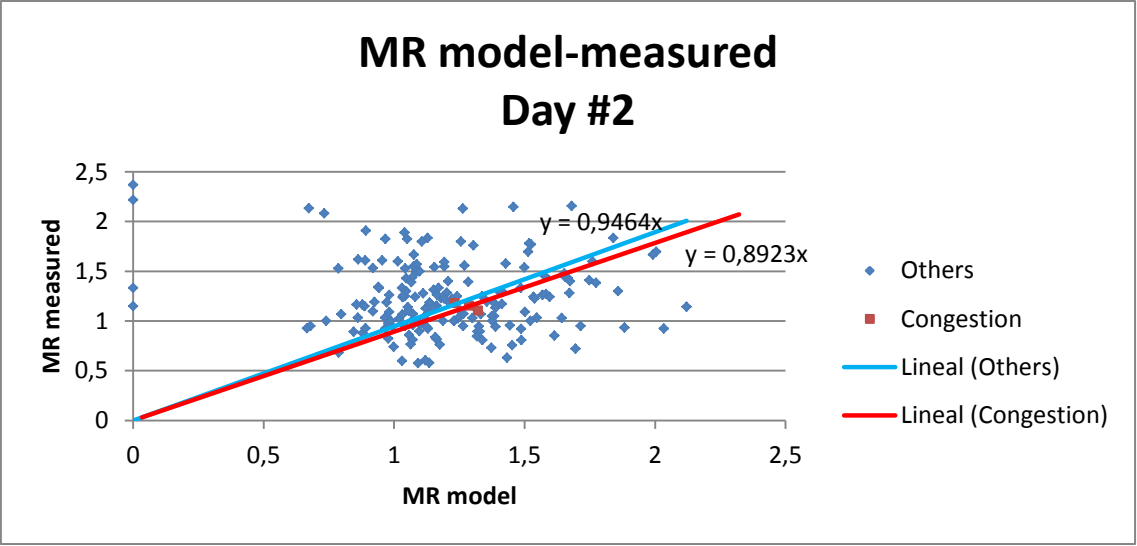


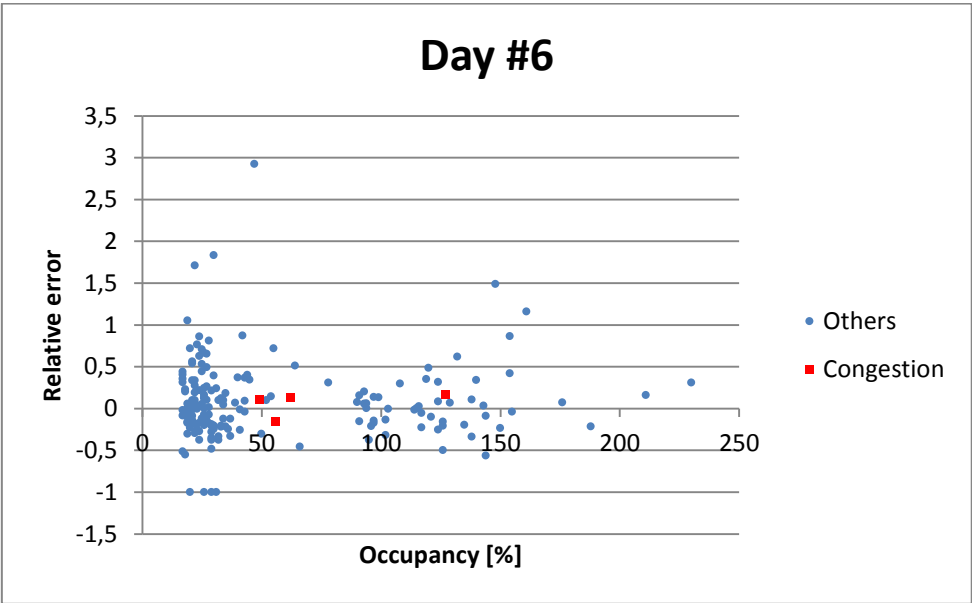
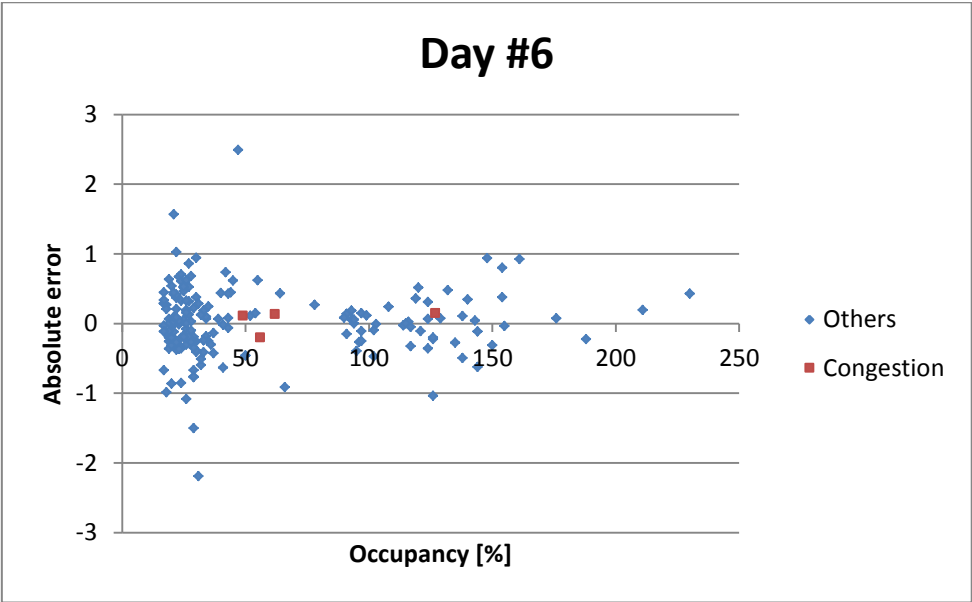
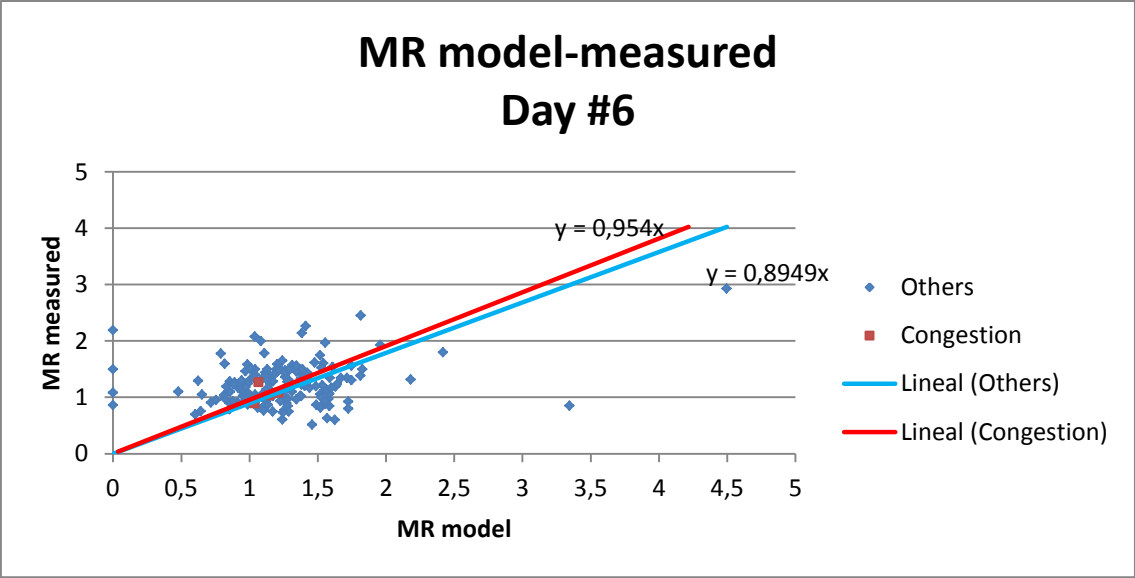
Annex 7: Merge Ratios

For each day, the merge ratio followed by the absolute error and relative error.



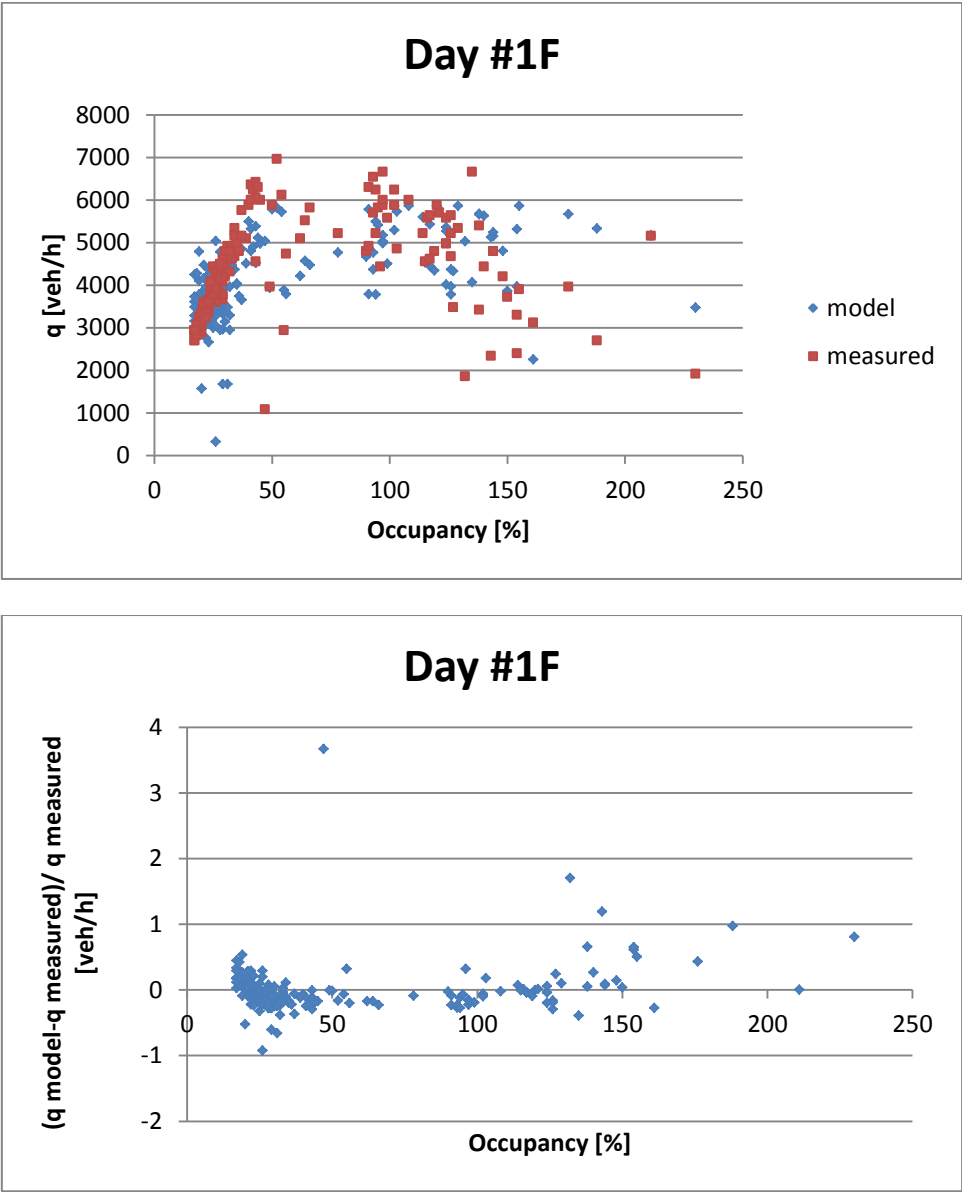


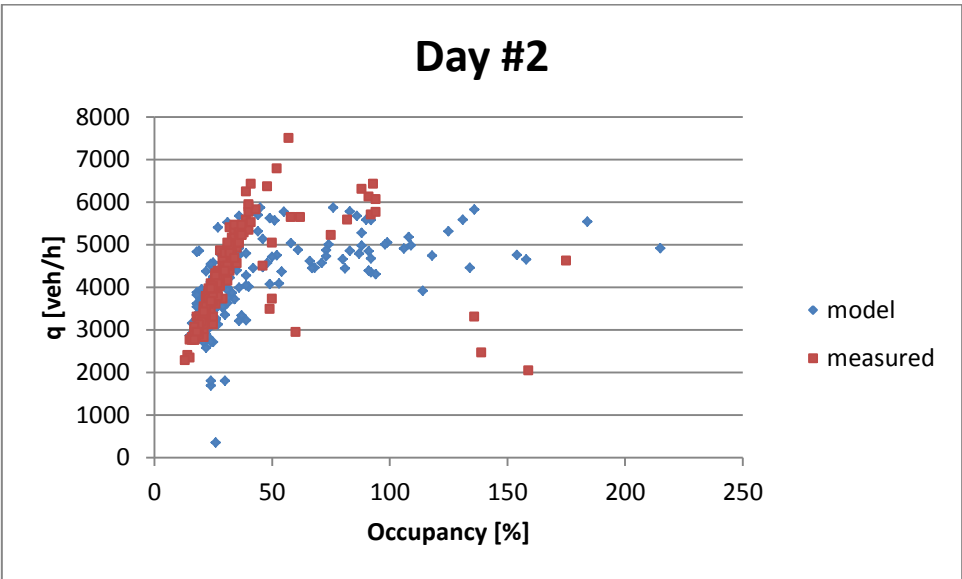
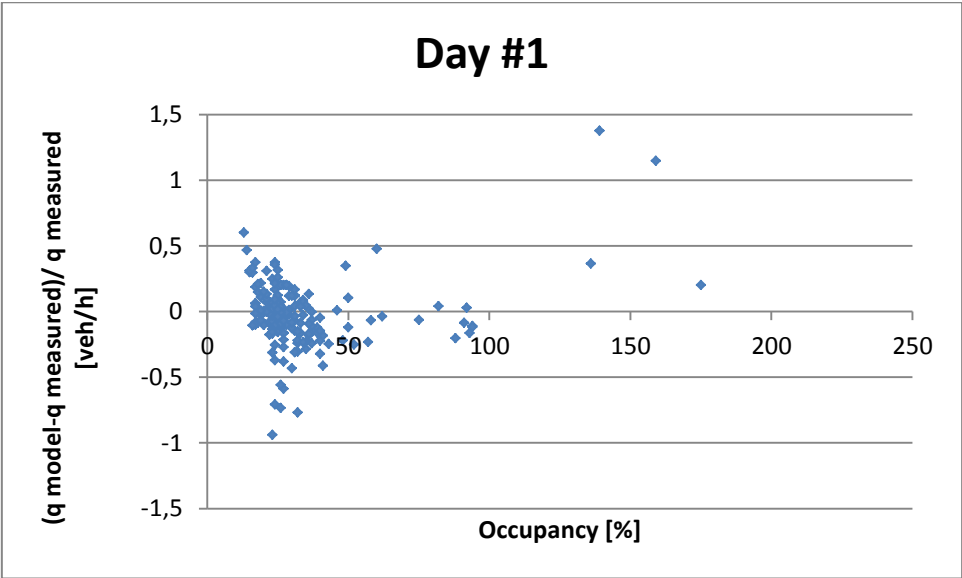
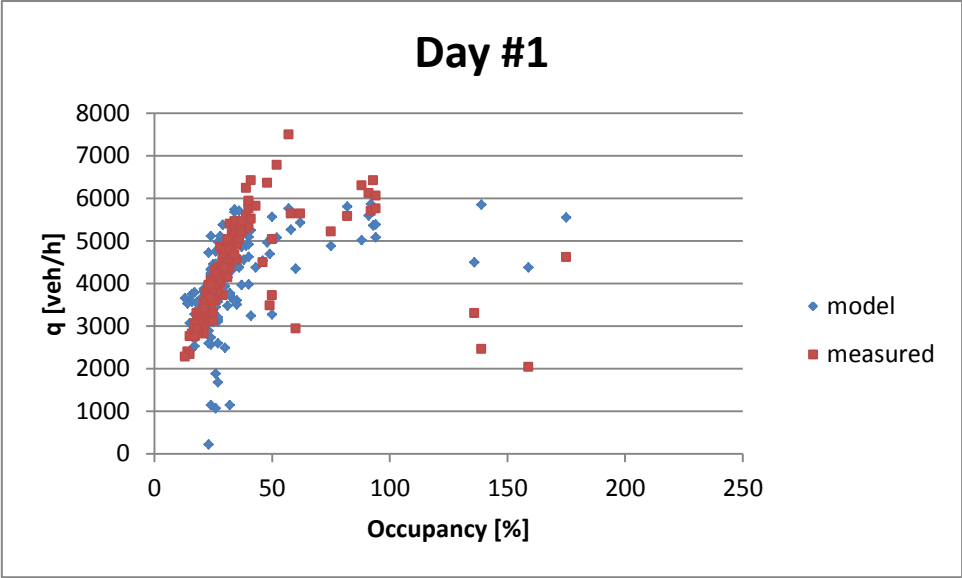


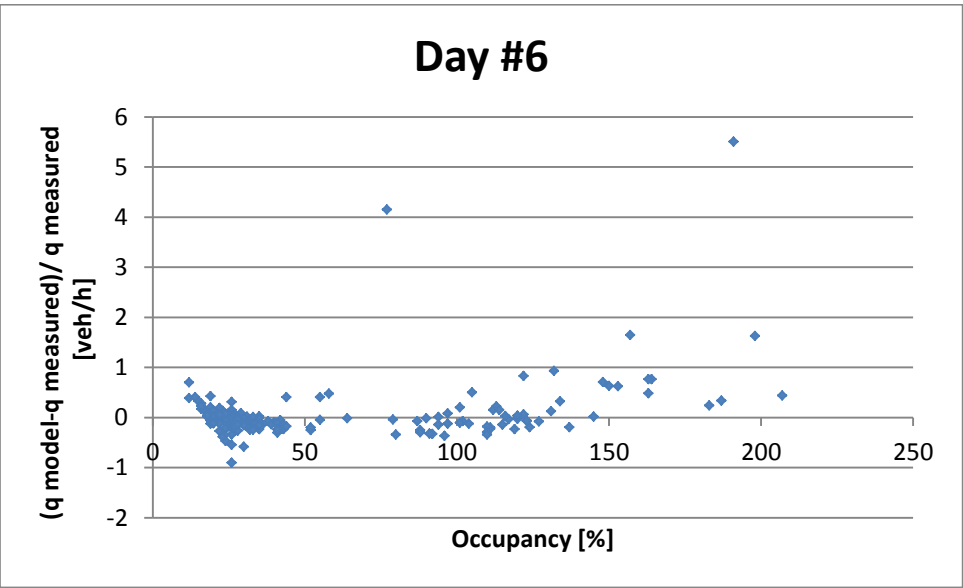
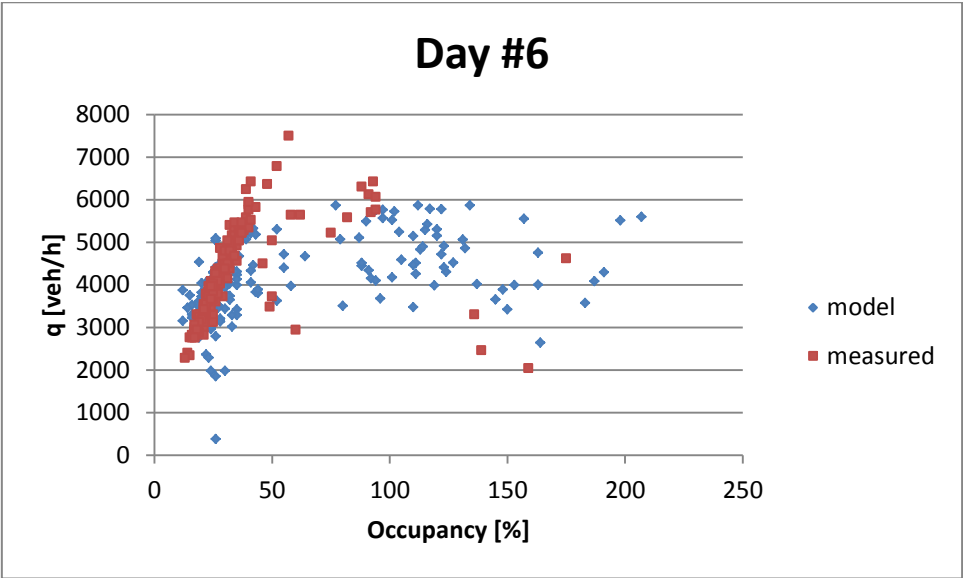
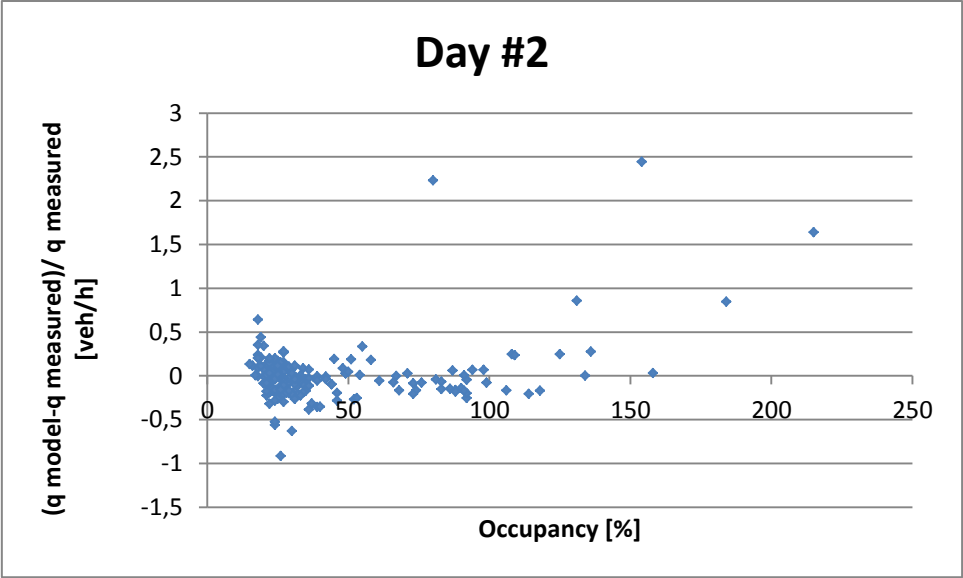


Annex 8: Flow-Occupancy s16

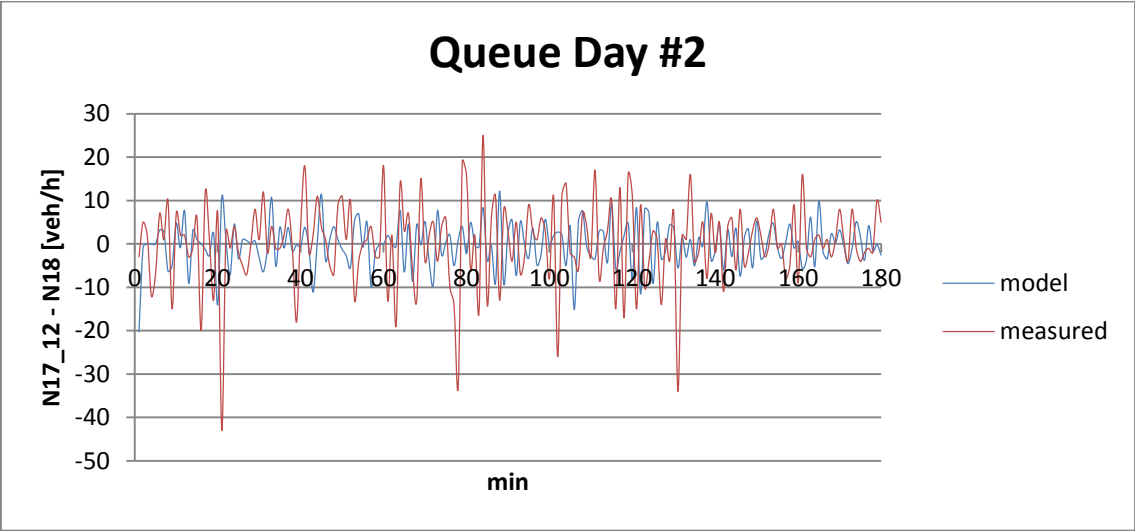
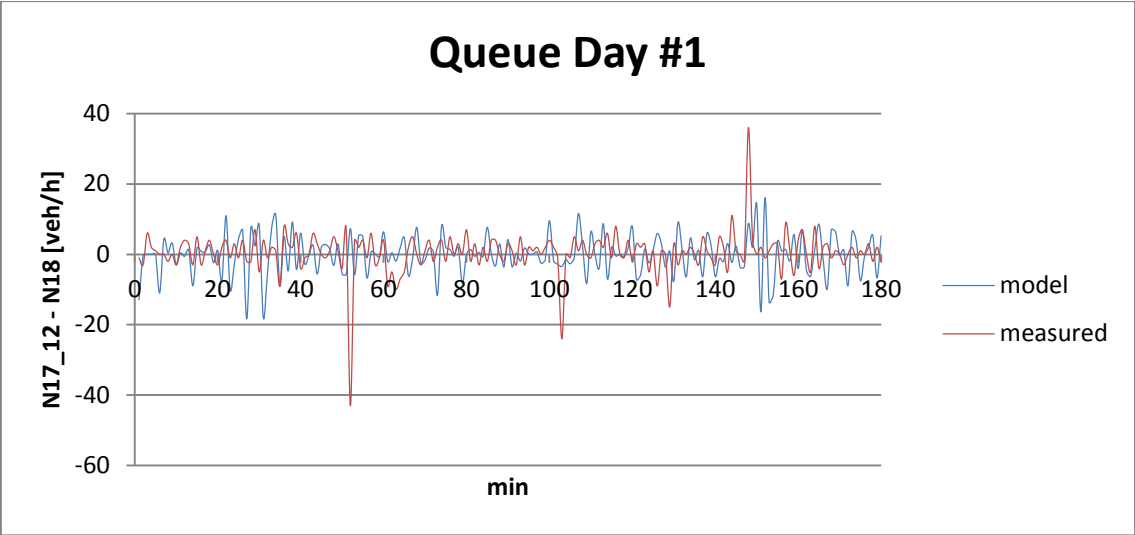
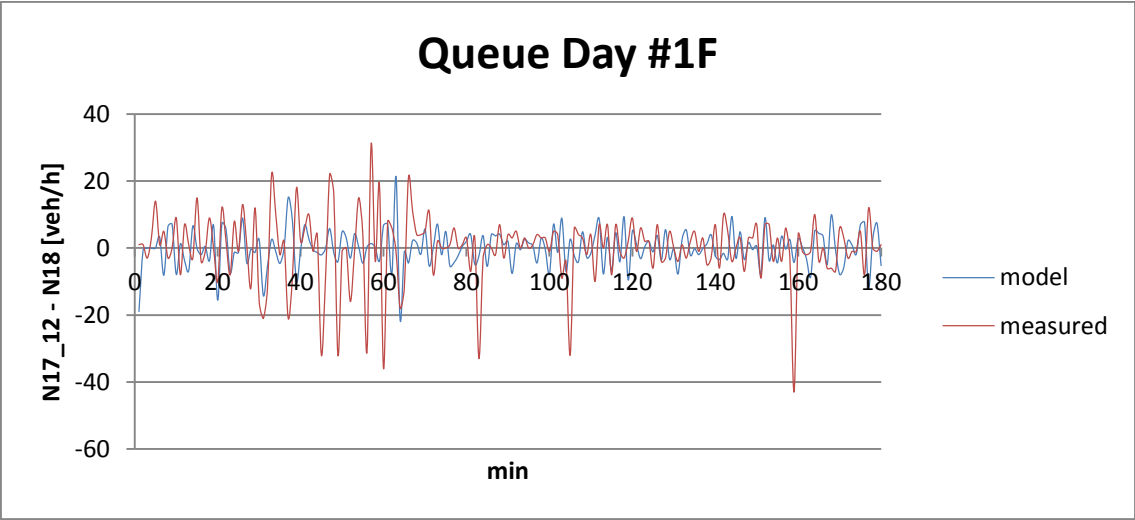
Flow-Occupancy and the error in flow assumption plotted with occupancy







Annex 9: Queue



Queue Day #6

